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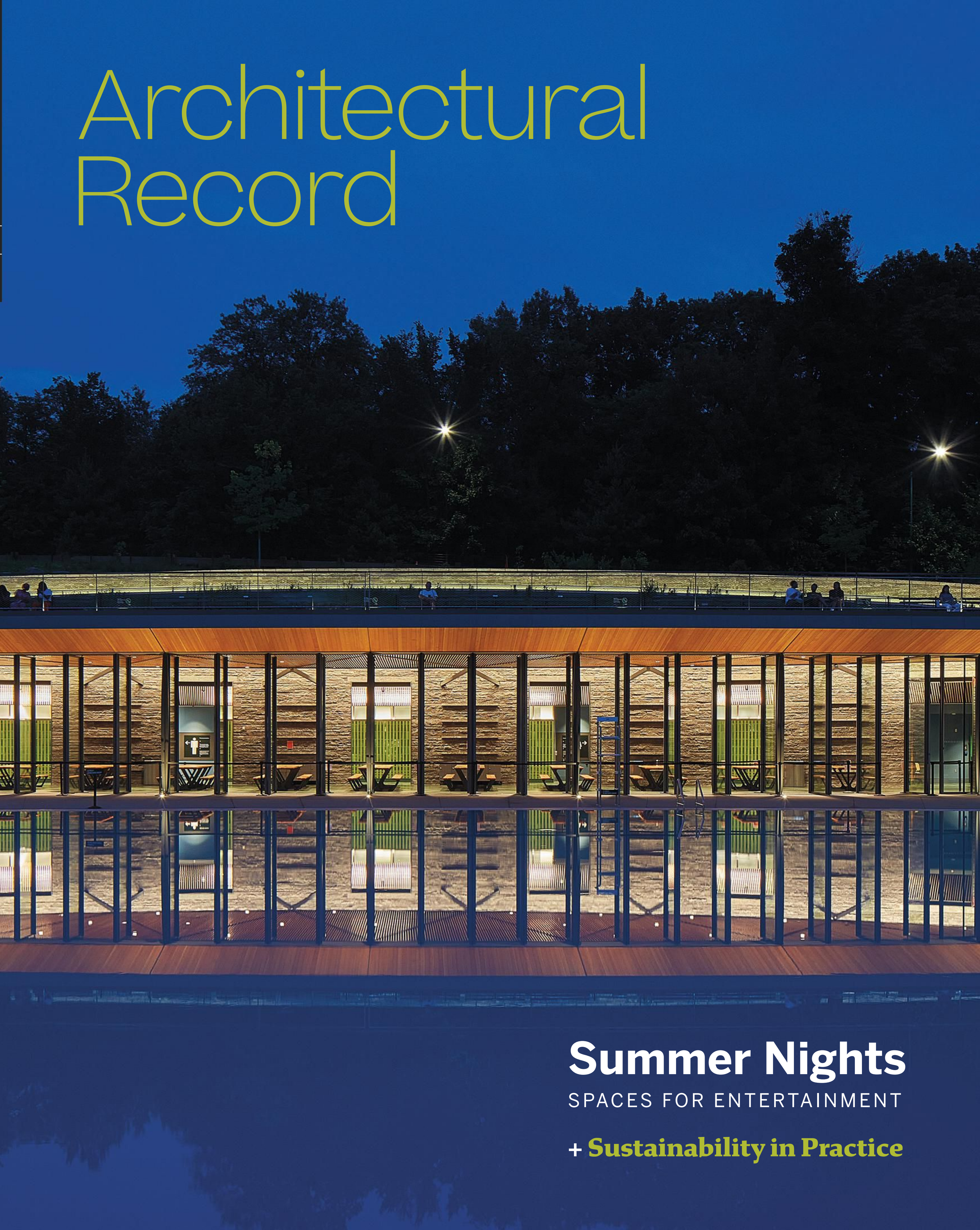

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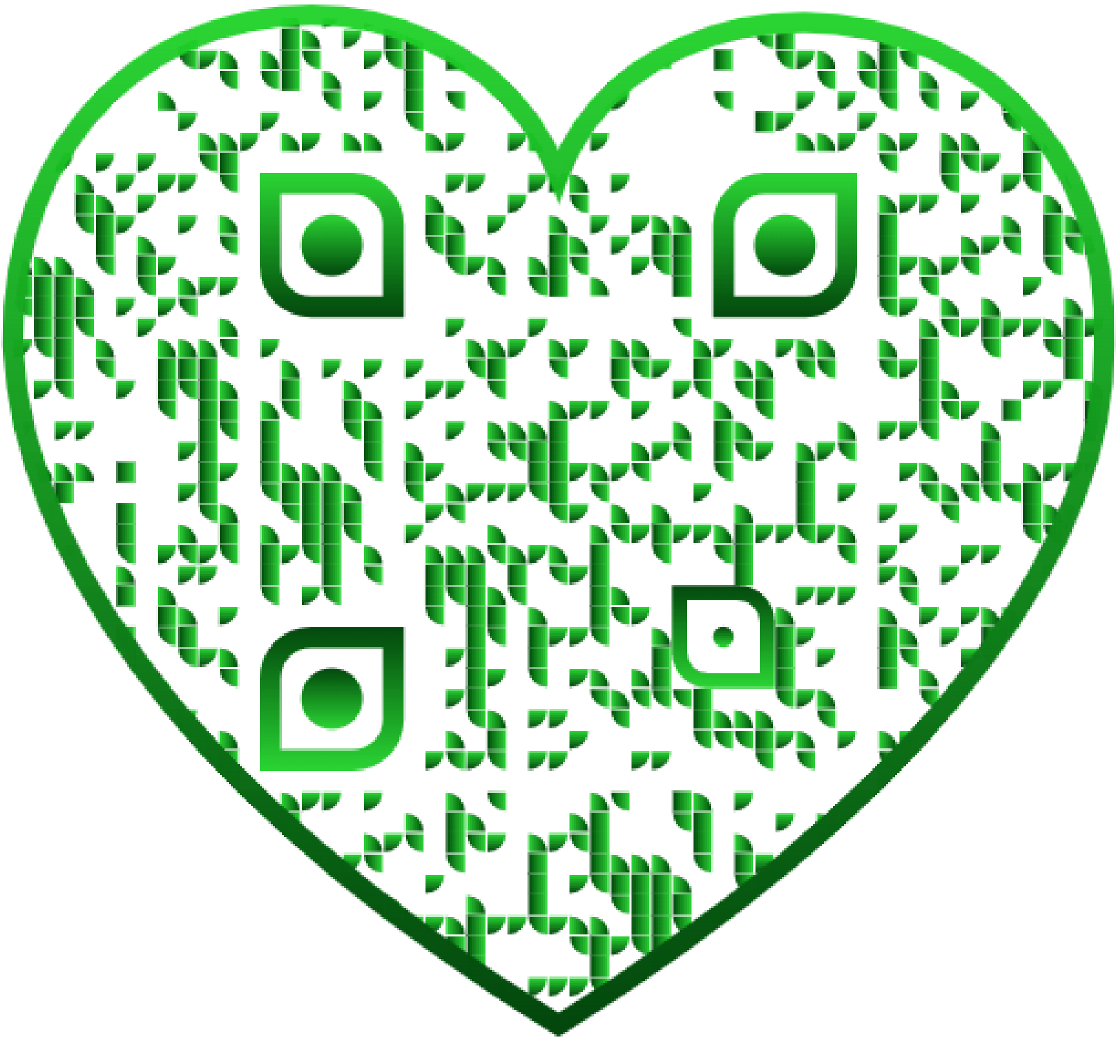

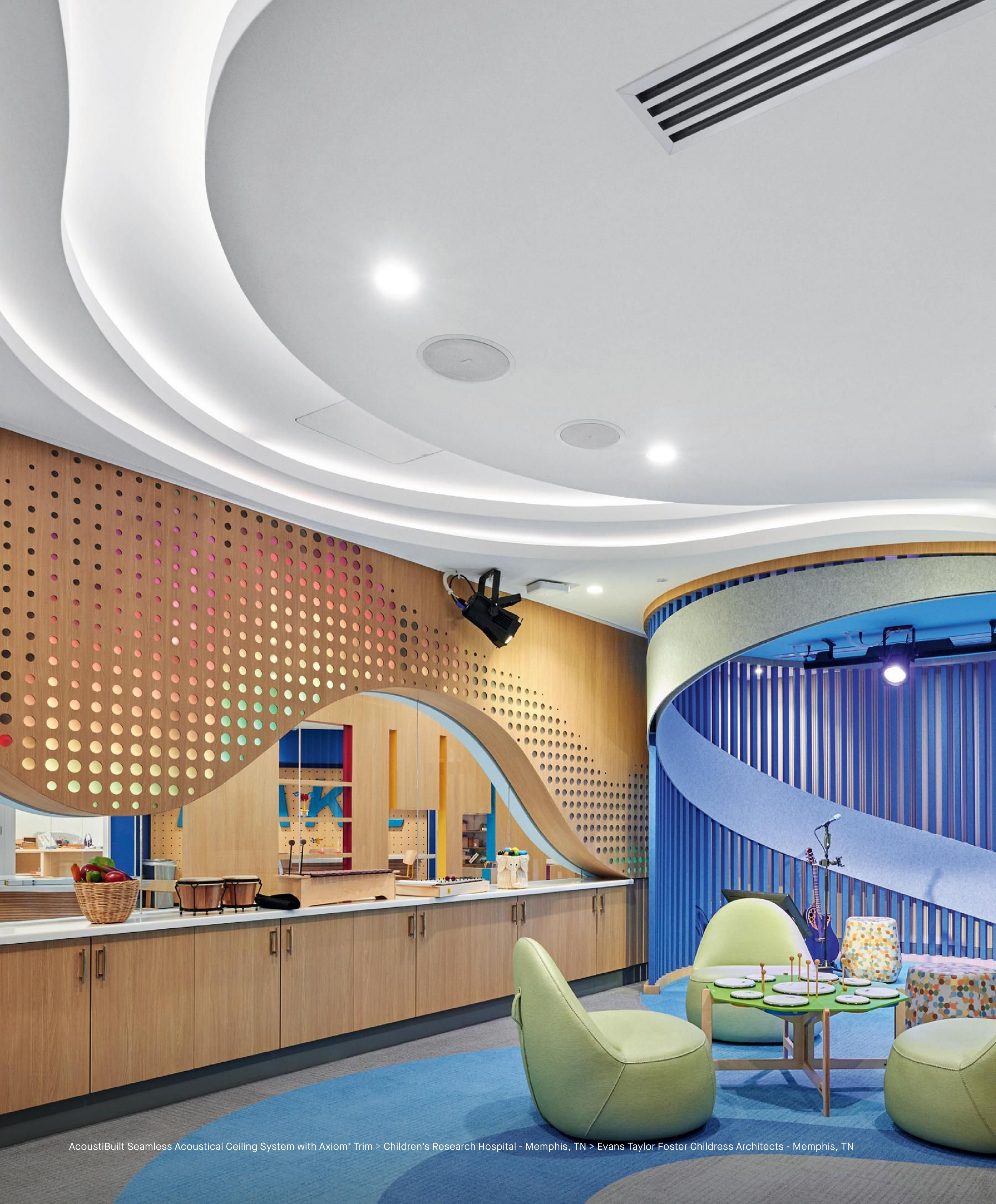

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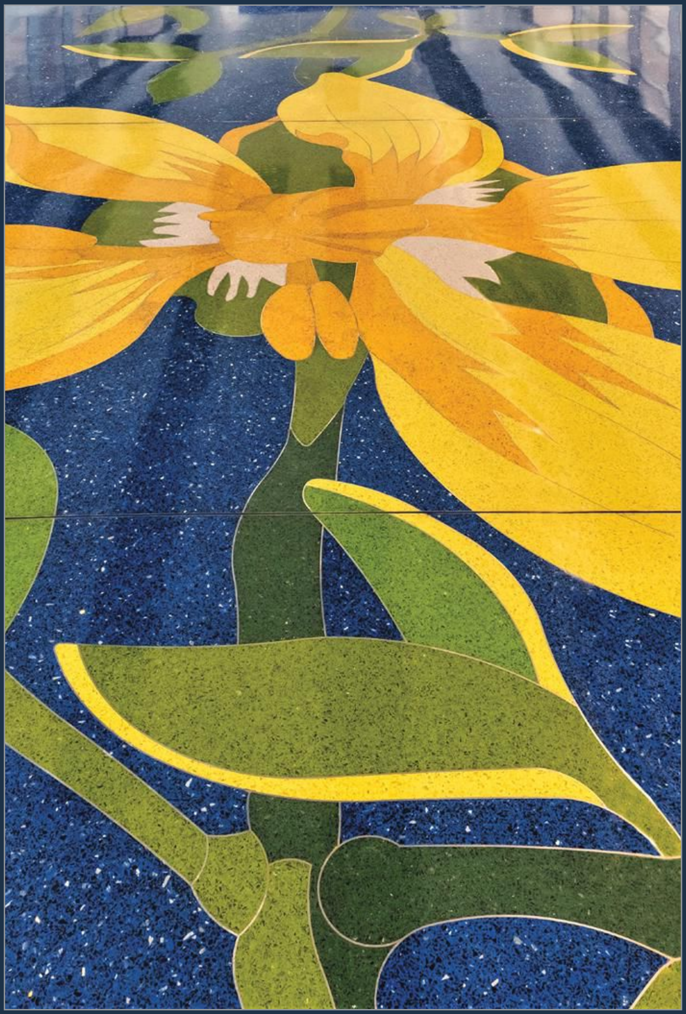

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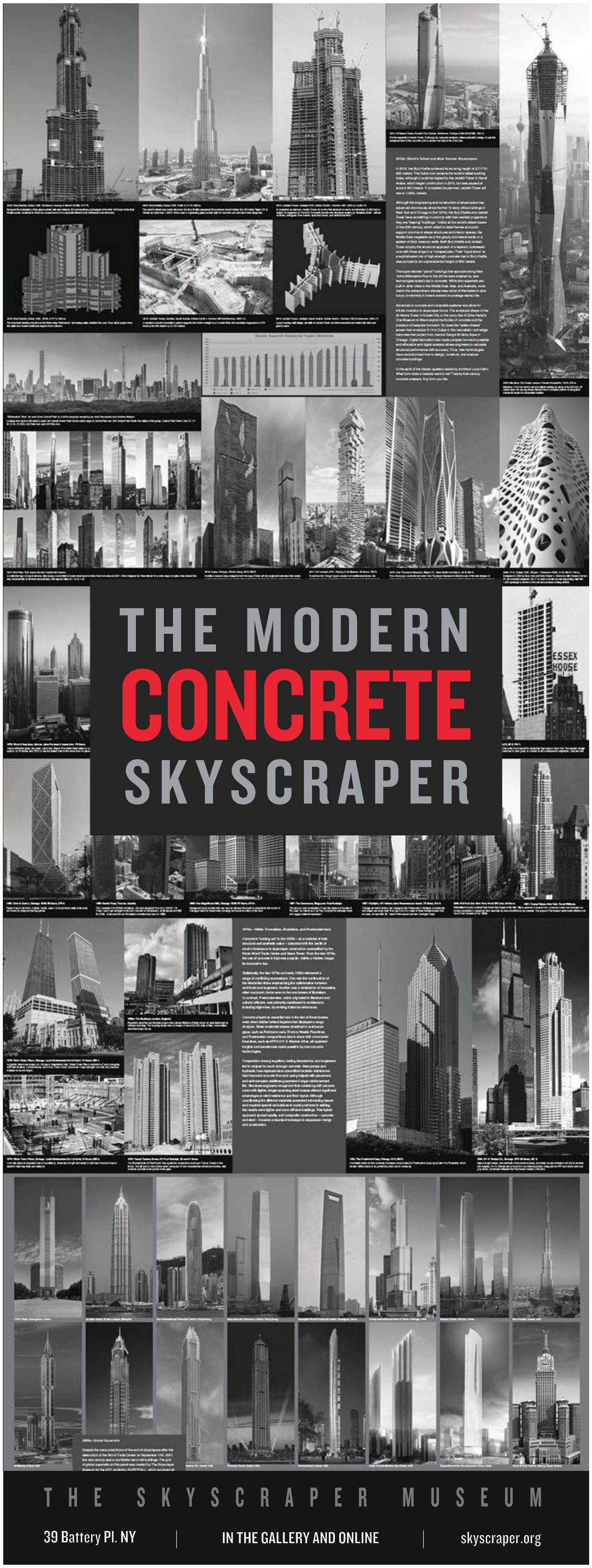

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COVER: THE DAVIS CENTER AT THE HARLEM MEER, NEW YORK, BY SUSAN T RODRIGUEZ | ARCHITECTURE • DESIGN. PHOTO © RICHARD BARNES.

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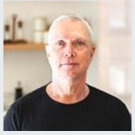

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From the EDITOR

In the Swim

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THIS ISSUE of RECORD has an unlikely star, since the architect and landscape designer Calvert Vaux was often overshadowed by his partners during his career. (He died at 70 by drowning while walking along Gravesend Bay in Brooklyn.) Yet the renovation of two projects by the London-born, New York–based Vaux proves he deserves a more knowing assessment. The first—perhaps his most famous, and designed with Frederick Law Olmsted—is in Central Park. A significant section of the park's northeast corner has been reimagined by Susan T Rodriguez to better embody Olmsted and Vaux's original vision, after the intervention of a 1960s swimming pool altered its landscape (cover and page 19). The other featured project, designed with George Radford, is a former outpost of the Children's Aid Society built on Manhattan's Upper East Side in 1891 to serve the growing Yorkville tenement district. Now, In Studio has converted it to a homelike tutoring center with some philanthropic intentions of its own (page 30). The stepped-gable building is one of about a dozen such structures Vaux designed for the charitable organization, but this example was deemed in the worst shape among those still extant; its redbrick facade had been stuccoed over, a wing demolished, and interiors stripped away.

Other Brits play an outsize role, if you will, with this issue. The work of Kevin Carmody and Andy Groarke, of London-based firm Carmody Groarke, leads our Sustainability in Practice section (page 69). These 2010 Design Vanguards will also be speaking at our next Sustainability in Practice conference on September 10. Carmody Groarke takes sustainable building in new directions while adhering to a strong design approach. For instance, its renovation and extension to the Design Museum Gent in Belgium, scheduled to open next year, is a handsome structure whose facade comprises bricks made from city waste such as concrete from demolished buildings and disused ceramics, toilets, and car windshields. The pair will talk about their material research, joining Jeanne Gang and Stefano Boeri at the conference, the first to be held in Chicago. We are pleased to partner with the Illinois Institute of Technology for that event, which takes place at Mies van der Rohe's Crown Hall. It immediately follows our celebration on September 9, also at Crown Hall, of this year's Women in Architecture award-winners: Chandra Robinson, Emily McGlohn, Roberta Washington, Gina Bocra, and Cynthia Weese (page 35). Please join us for two days of inspired architecture in a building that has inspired architects for almost 70 years!

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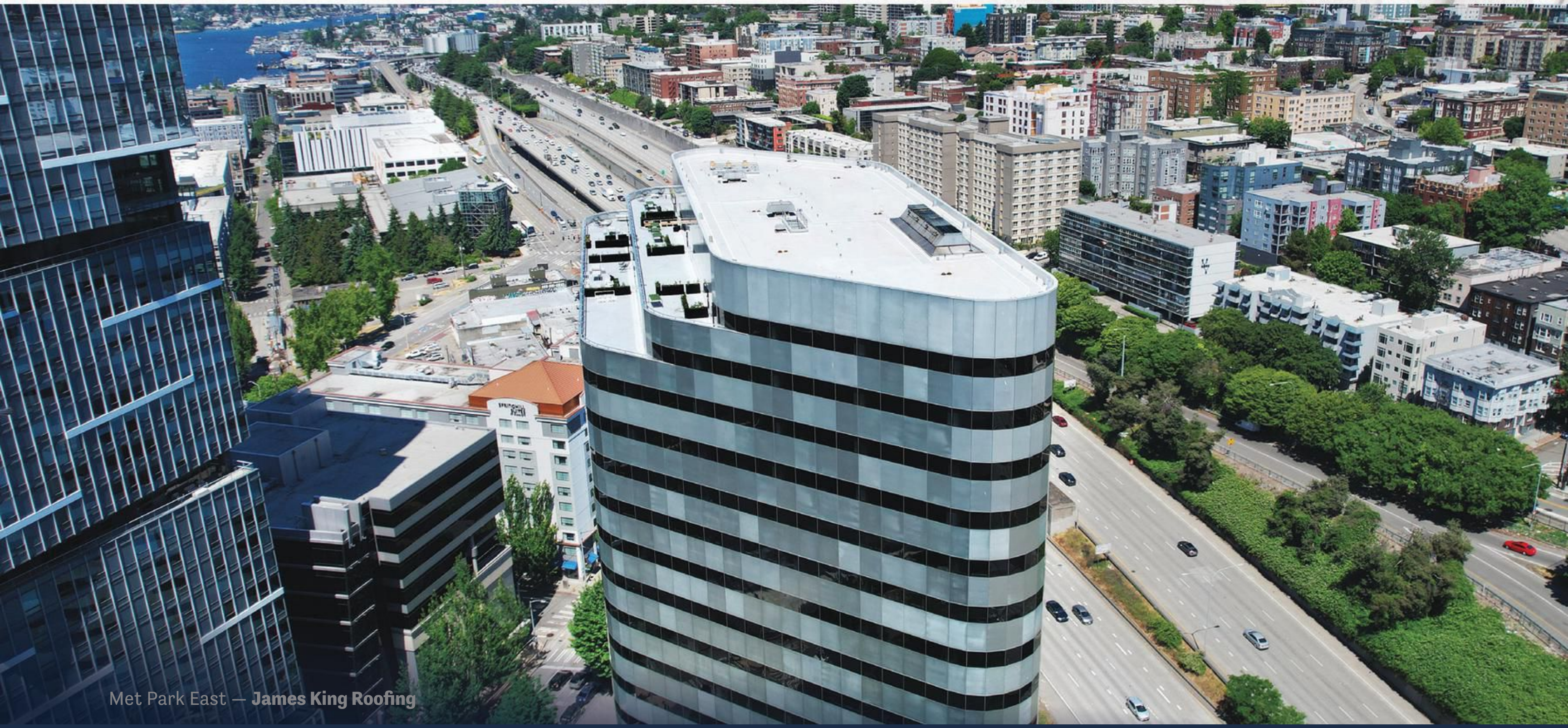

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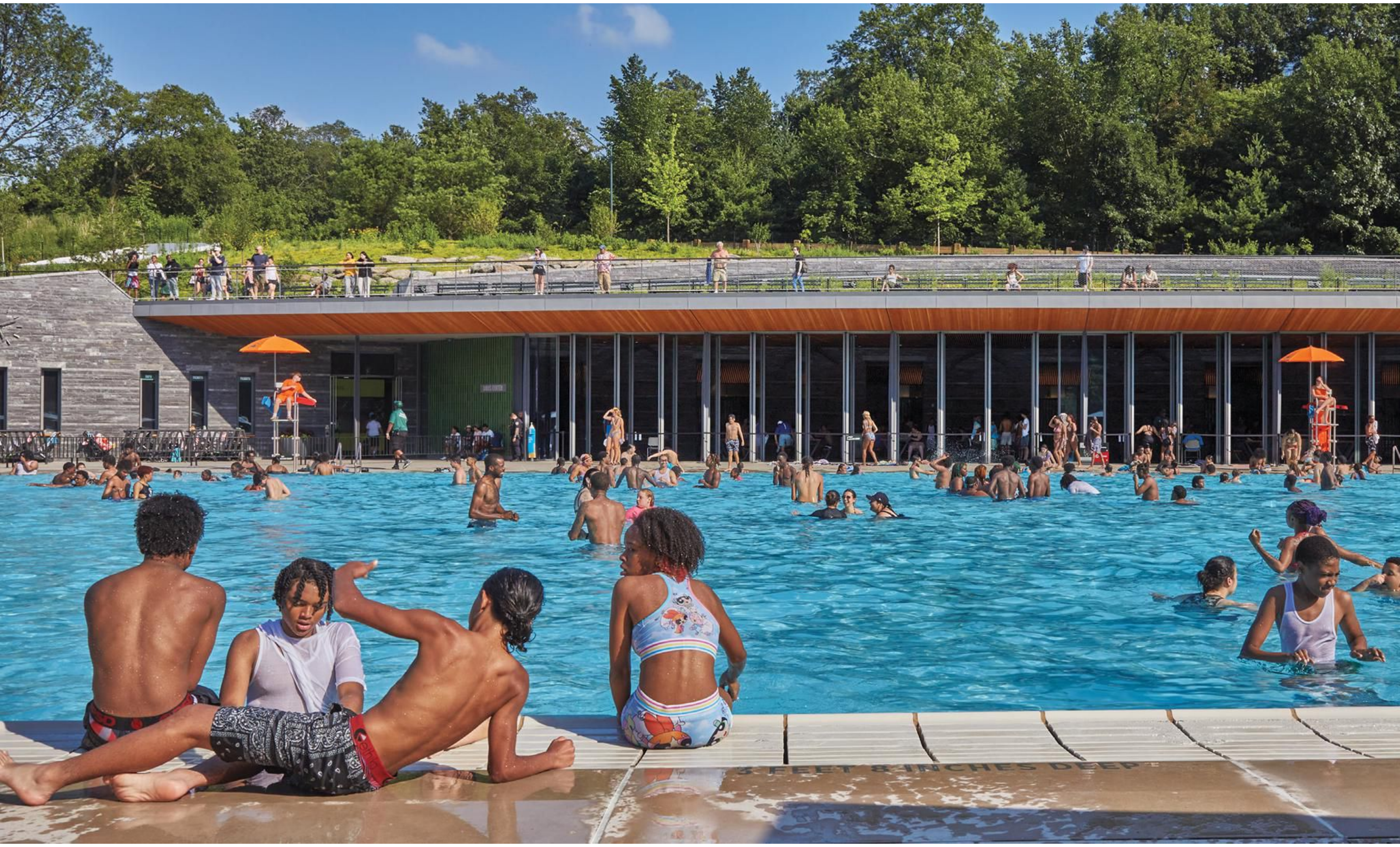
LANDSCAPE

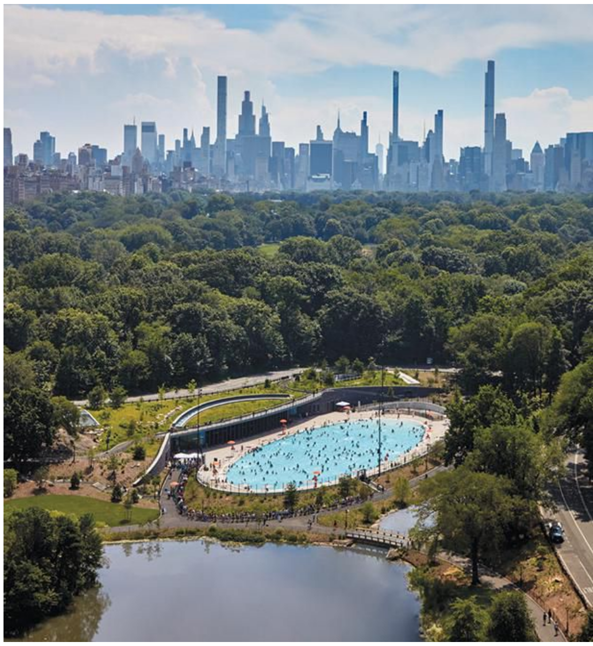
A NEW DESTINATION IN CENTRAL PARK CREATES SPACE FOR NEW YORKERS TO COOL OFF AND SLOW DOWN. **BY JOANN GONCHAR, FAIA**



WHEN FREDERICK Law Olmsted and Calvert Vaux designed New York's Central Park starting in the late 1850s, they created a set of diverse landscapes—including fields, meadows, lawns, and broad lakes. In the park's upper reaches, they accentuated the existing topography, seeking to mimic the experience of visiting the Catskill or Adirondack Mountains, with rocky outcroppings, meandering streams, and wooded trails. Here, and throughout the park's 843 acres, they hoped city residents would commune with nature, finding respite from the chaos of urban life. "What we want to gain is tranquility and rest to the mind," said Olmsted in 1870.

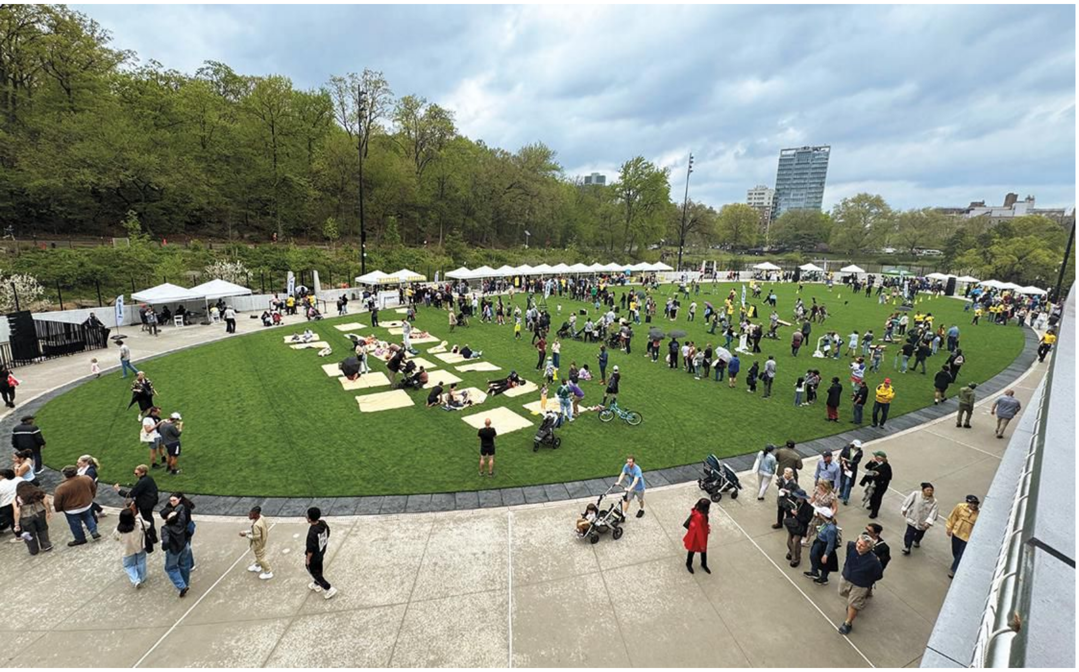
Olmsted and Vaux probably never imagined that the rustic landscape near the park's north end would one day be home to a chlorinated swimming pool with hundreds of kids boisterously splashing about. Nevertheless, during the summer months, if you take a 10-minute stroll from Fifth Avenue and East 106th Street, pass the manmade lake known as the Harlem Meer, and traverse a grassy hillock, that is exactly what you will find: children (as well as adults) bobbing in a vast oval-shaped pool—a marquee feature of Central Park's recently completed Davis Center.

The project, paid for with $60 million from the city and $100 million raised by the nonprofit Central Park Conservancy replaces the Lasker Pool and Rink, a 1960s-era combined swimming and skating facility, which was well used by the surrounding community, but problem plagued. The old pool constantly leaked. Its brawny concrete structure had been seemingly muscled into what had been a ravine, without regard for the landscape's topography or its hydrology. Built on top of a



The Davis Center's building is inserted into a hill along a park drive (right). The path along its green roof serves as an overlook (above).

PHOTOGRAPHY: © RICHARD BARNES, EXCEPT AS NOTED



During spring and fall, the pool is decked over (left). The rich materials include regionally sourced stone (opposite, top and bottom, left) and green ceramic tiles (opposite, bottom right).

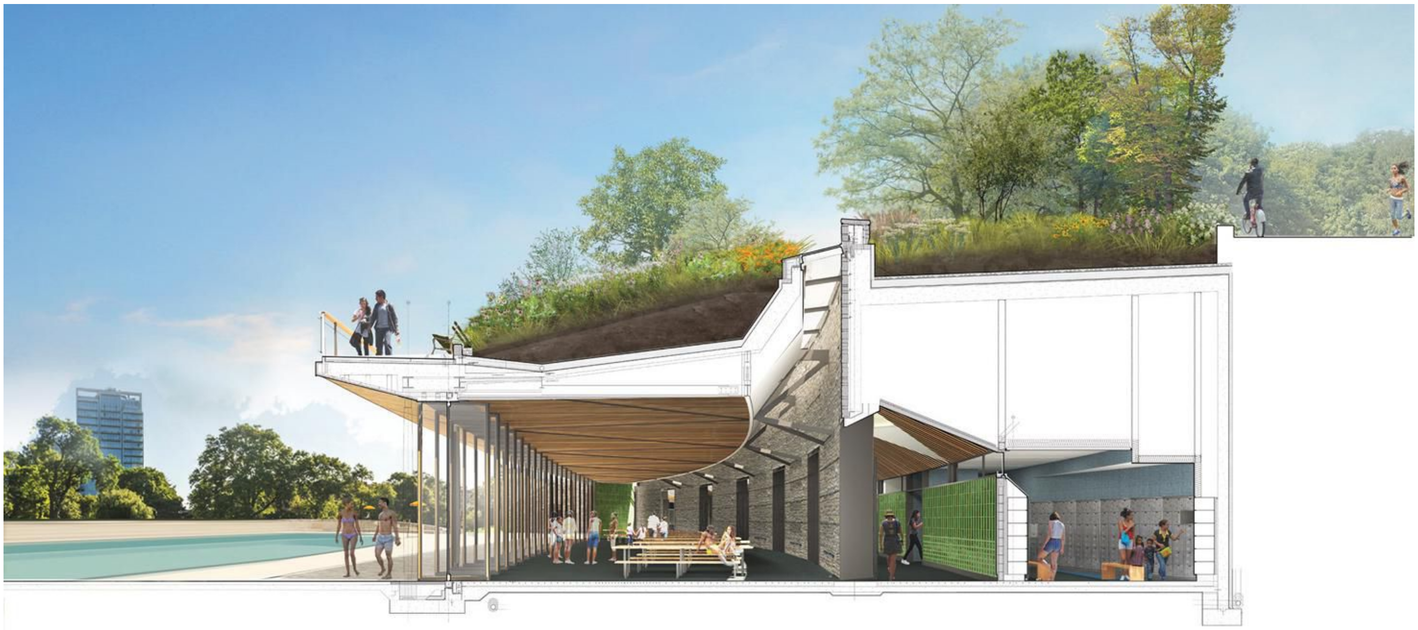
culverted stream that had connected a series of water features, Lasker impeded the supply of fresh water to the nearby Meer and would flood during rainstorms. It also disrupted a pedestrian route through the park. “Lasker was an object—a blockage,” says Susan Rodriguez, whose namesake architecture firm, in collaboration with Mitchell Giurgola Architects and the Conservancy, designed the Davis Center project.

The Davis Center seeks to address these problems—and more—with the aim of revitalizing the ecology of the long-neglected surrounding parkland, while sensitively integrating the recreational facilities into Olmsted and Vaux’s landscape. “That was the high-level idea behind the project,” explains Christopher Nolan, former chief landscape architect for the Conservancy.

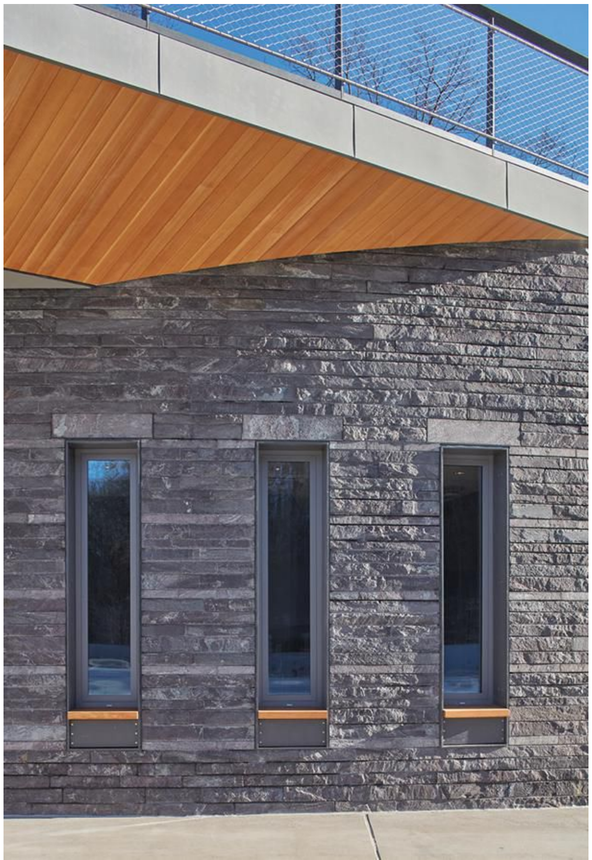
In contrast to the imposing Lasker, the new 34,000-square-foot building, which houses changing rooms, a snack bar, and an indoor social space, is camouflaged. It has been carefully inserted into the snaking geometry of the park’s loop drive and partially submerged into a hillside. Covered with a meadow-like green roof of tall grasses and trees, including pines and oaks, park users who approach from certain directions may not realize there is a building there at all.

The pool itself, free of charge for all and managed by the city’s parks department, is an elegant ellipse, 120 feet wide and 285 feet long, with a capacity for 1,000 swimmers. Its predecessor was about 25 percent larger but had a more rounded ovoid shape (which some observers say resembled a toilet bowl). The new configuration is safer, says Rodriguez, since it is narrower, allowing lifeguards to quickly reach anyone in distress, she explains. It is also more accessible, with one end providing “zero entry,” where the pool bottom slopes gradually from the deck, allowing patrons with limited mobility to enter the water without negotiating stairs or ladders.

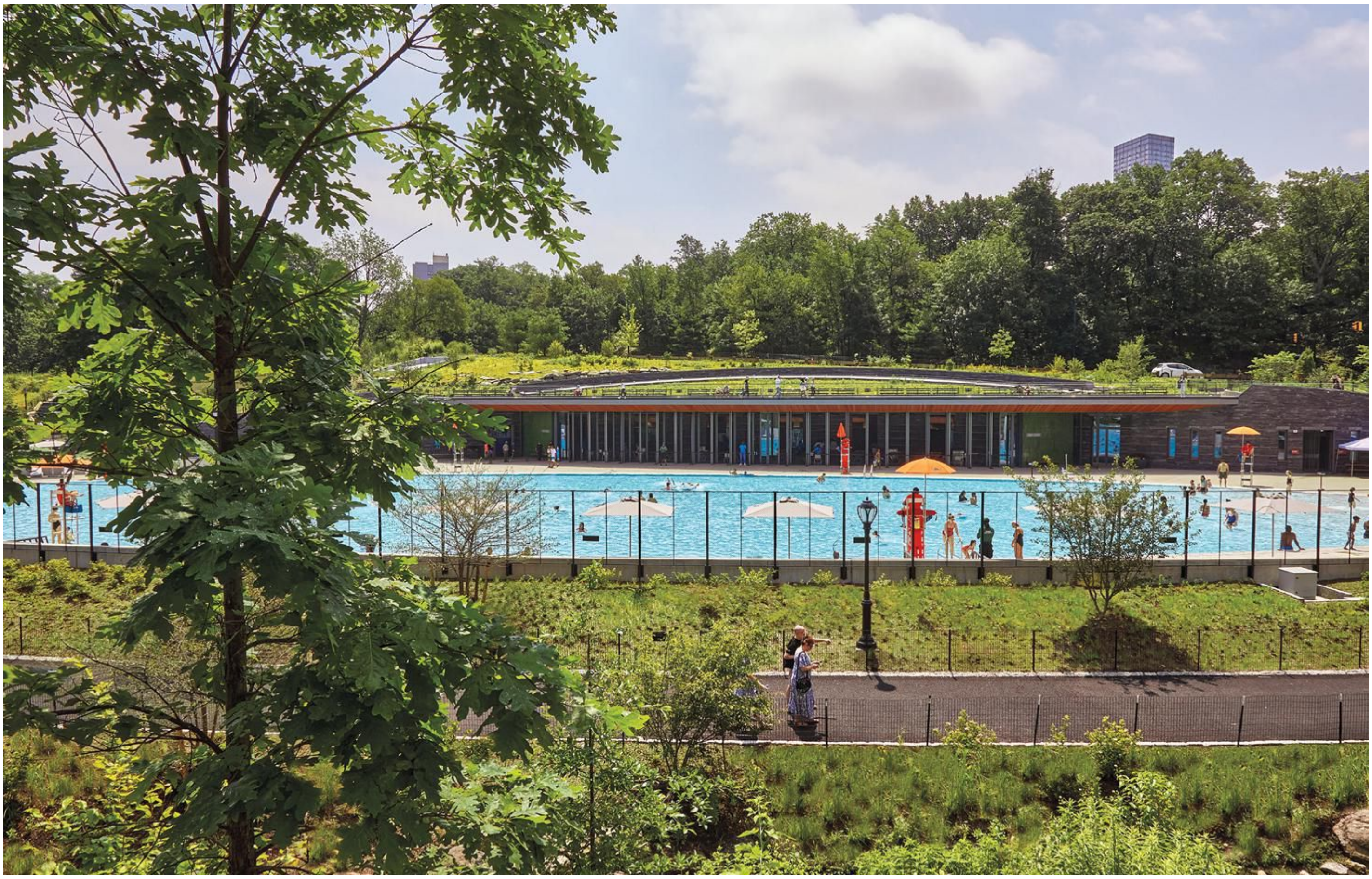
Like the old Lasker facility, the pool will transform to an ice rink during the winter months. But instead of sitting unused in the autumn and spring, it has been designed to be covered with a deck and artificial turf. During the shoulder seasons, this “Harlem Oval” provides space for lounging, picnick-



SECTION PERSPECTIVE



PHOTOGRAPHY: © SUSAN T RODRIGUEZ ARCHITECTURE (OPPOSITE)



A new pathway hugs the pool's western bermed edge, reinstating a pedestrian route through the park.

ing, or group programming such as yoga. "It is three facilities in one," says Rodriguez.

The building too will be open to parkgoers year-round. And though the structure seems hardly there at all from the outside, it is a stunner on the inside, with a 14-foot-tall social space opening out onto the pool deck via a series of full-height glazed pivot doors along its 150-foot length. The room's lenticular plan is mirrored in the wood-baffled ceiling, where the outline of the triangulated trusses supporting the green roof above is traced. Sunlight streams in from a curved string of skylights, washing an arced wall clad in regionally sourced granite. Generously scaled portals open to a corridor leading to the changing rooms and other amenities, revealing deep-green ceramic tiles beyond.

The just completed project includes repairing eight acres of the surrounding landscape, the last in a series of ecosystem-restoration efforts at the park's northern end occurring over several decades. Part of the recent work involved repairing the site's hydrology and reinstating a pedestrian route. A winding pathway now hugs the pool's bermed western edge and, beside it, the once-buried stream, brought to the surface, gently flows.

The landscape here has been conceived as "successional"—to evolve over time, says Nolan. At the stream edge, for instance, as trees mature, the ground cover will shift to more shade-tolerant species, making some areas more like woodland, he says.

Where the stream empties into the Meer, marshland plants help make the transition from brook to lake. A curving boardwalk wraps the water's edge, supporting activities such as birding and fishing.

This final small piece is a microcosm of the ambitious Davis Center project, which provides ecological rehabilitation and creates space for recreation. "It is a constructed landscape," says Nolan, "but one that allows city dwellers to reconnect to nature." ■

Credits

ARCHITECT: Susan T Rodriguez | Architecture • Design—Susan T Rodriguez, principal; Mikhail Grinwald, Sonia Flamberg, Amy Maresko, Josh Homer, George Switzer, Duncan White, Megan Friedman, project team

ARCHITECT OF RECORD: Mitchell Giurgola Architects

CONSULTANTS: LERA Consulting Structural Engineers (structure), Loring Consulting Engineers (m/e/p), Langan (geotechnical, site/civil); Stantec (rink/pool), Atelier Ten (sustainability), Werner Sobek (facades), Studio Sustena (green roof), Pine and Swallow (soils)

GENERAL CONTRACTOR: E.W. Howell

CLIENT/LANDSCAPE ARCHITECT: Central Park Conservancy

SIZE: 34,000 square feet

COST: $160 million

COMPLETION DATE: April 2025

Sources

CLADDING: Champlain Stone, Berardi Stone, VM Zinc, Knight Wall Systems, Parex USA

PIVOTING WALL SYSTEM: Roschmann, Keller

INTERIOR AND EXTERIOR GLAZING: Eckelt, Tvitec, Reynaers, Vitro, TGP, Bendheim

TILE: Heath Ceramics, Daltile

HARDWARE: Schlage, LCN, Rixson, Tormax, CRL, Rockwood, Von Duprin

LIGHTING: Electrix, A-Light, Presolite, Lumenspulse, Pathway Lighting, Gotham, Bega, SpecGradeLED, Lutron

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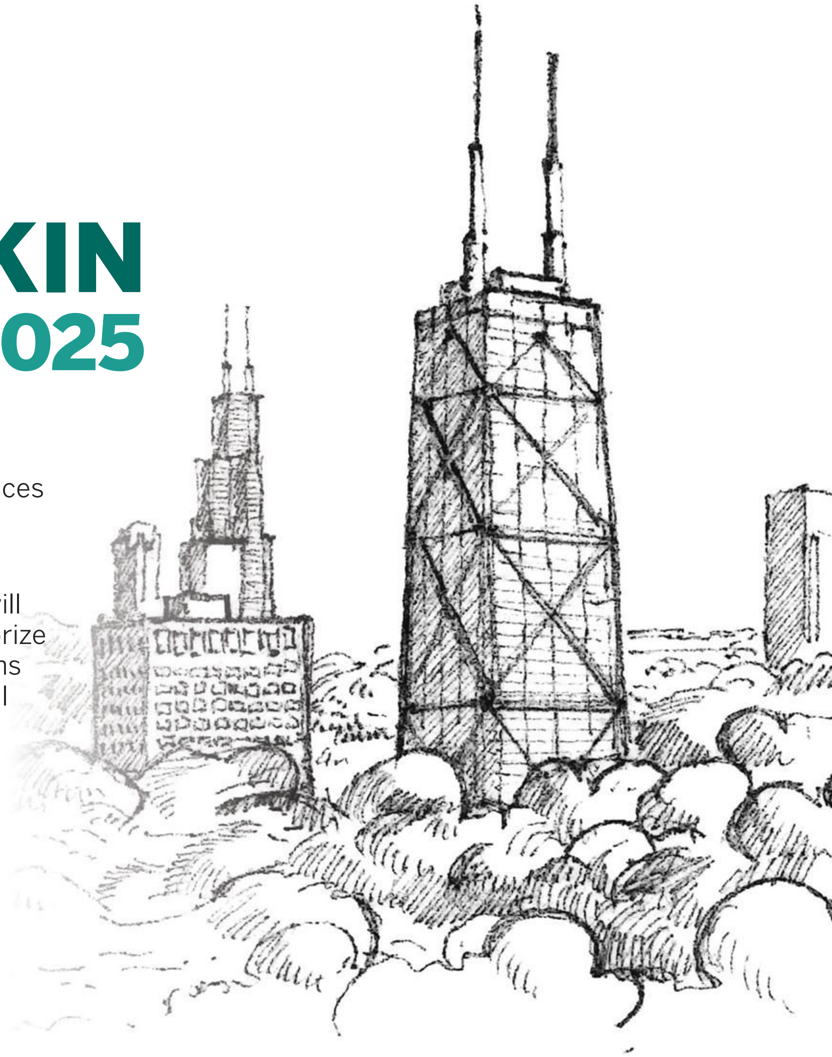

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The sketches of the winners and runners-up will be published in the November 2025 issue of *Architectural Record* and on architecturalrecord.com.

SUBMIT SKETCHES BY AUGUST 26, 2025

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☐ DESIGNER
☐ FACILITIES MANAGER
☐ OTHER ____________

Entry form the size of 5 x 5 cocktail napkin, for reference.

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HOW TO ENTER:

- Sketches should be architecture-oriented and drawn specifically for this competition.
- Create a sketch on a 5-inch-by-5-inch white paper cocktail napkin. You may cut a larger napkin down to these dimensions.
- Use ink or ballpoint pen.
- Include the registration form below or from the website.
- You may submit up to 6 cocktail napkin sketches, but each one should be numbered on the back and include your name.
- All materials must be postmarked no later than August 26, 2025.

For more information and official rules visit:
architecturalrecord.com/cocktail-napkin-sketch-contest

Due to the volume of entries, cocktail napkin sketches will not be returned.

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350 5th Avenue, Suite 6000
New York, NY 10118

BACKGROUND FEATURES
RYAN CHESTER, 2024 REGISTERED ARCHITECT WINNER

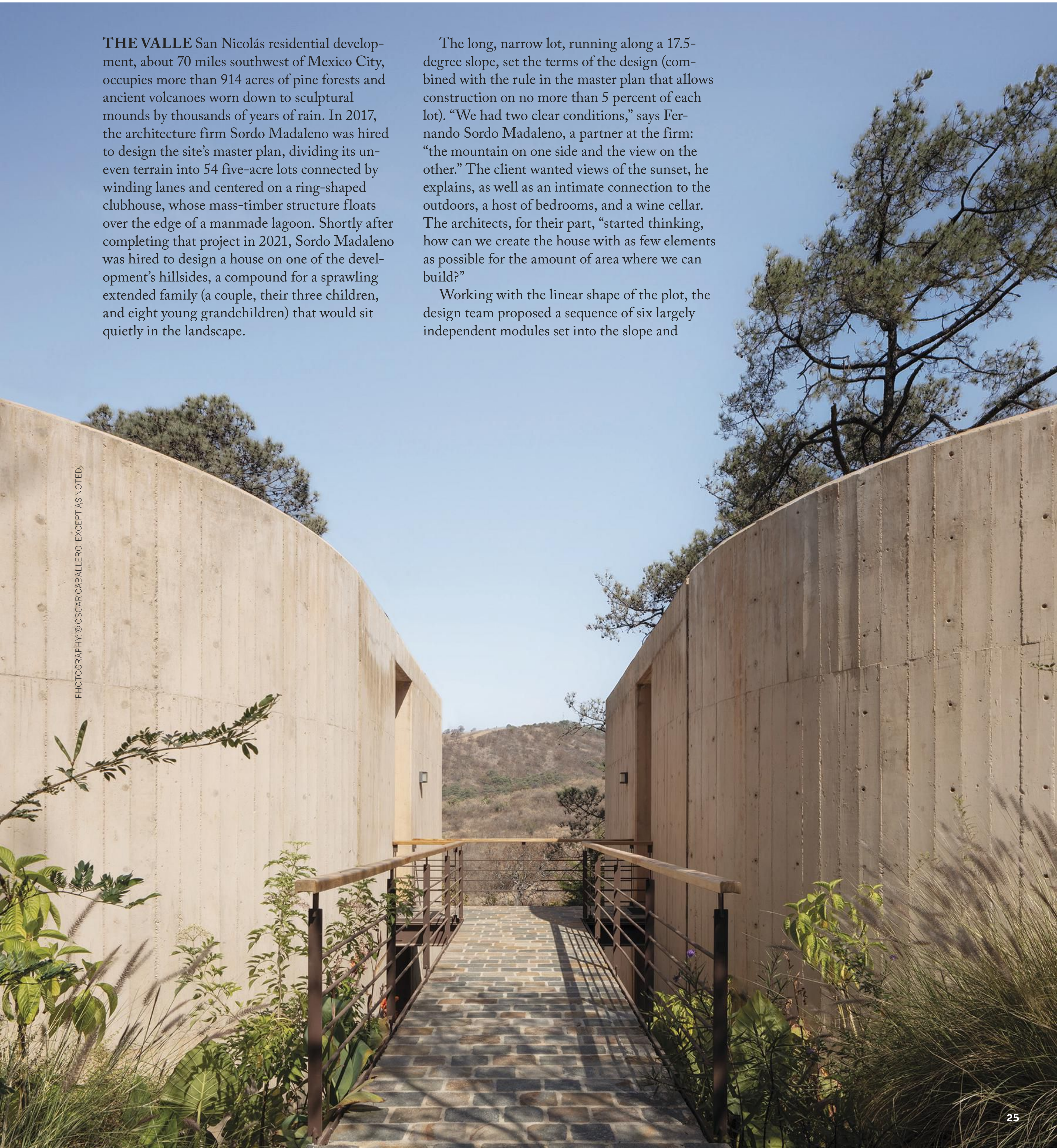
HOUSE of the Month

AT A COMPOUND IN MEXICO, MULTIPLE GENERATIONS OF A FAMILY CONNECT WITH EACH OTHER AND NATURE. **BY MICHAEL SNYDER**

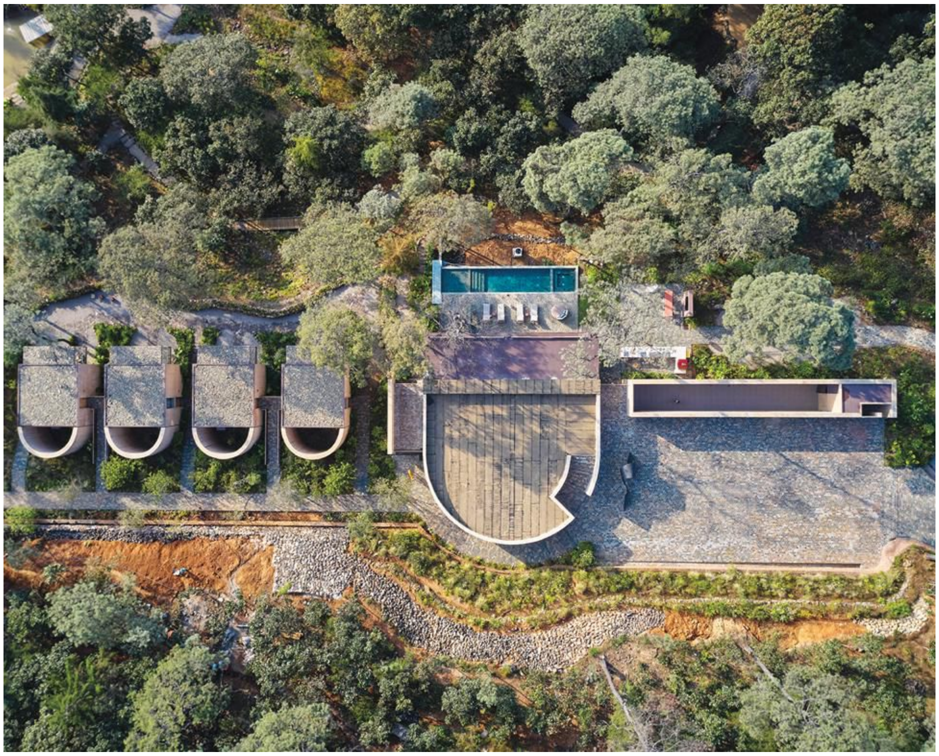
THE VALLE San Nicolás residential development, about 70 miles southwest of Mexico City, occupies more than 914 acres of pine forests and ancient volcanoes worn down to sculptural mounds by thousands of years of rain. In 2017, the architecture firm Sordo Madaleno was hired to design the site's master plan, dividing its uneven terrain into 54 five-acre lots connected by winding lanes and centered on a ring-shaped clubhouse, whose mass-timber structure floats over the edge of a manmade lagoon. Shortly after completing that project in 2021, Sordo Madaleno was hired to design a house on one of the development's hillsides, a compound for a sprawling extended family (a couple, their three children, and eight young grandchildren) that would sit quietly in the landscape.

The long, narrow lot, running along a 17.5-degree slope, set the terms of the design (combined with the rule in the master plan that allows construction on no more than 5 percent of each lot). "We had two clear conditions," says Fernando Sordo Madaleno, a partner at the firm: "the mountain on one side and the view on the other." The client wanted views of the sunset, he explains, as well as an intimate connection to the outdoors, a host of bedrooms, and a wine cellar. The architects, for their part, "started thinking, how can we create the house with as few elements as possible for the amount of area where we can build?"

Working with the linear shape of the plot, the design team proposed a sequence of six largely independent modules set into the slope and

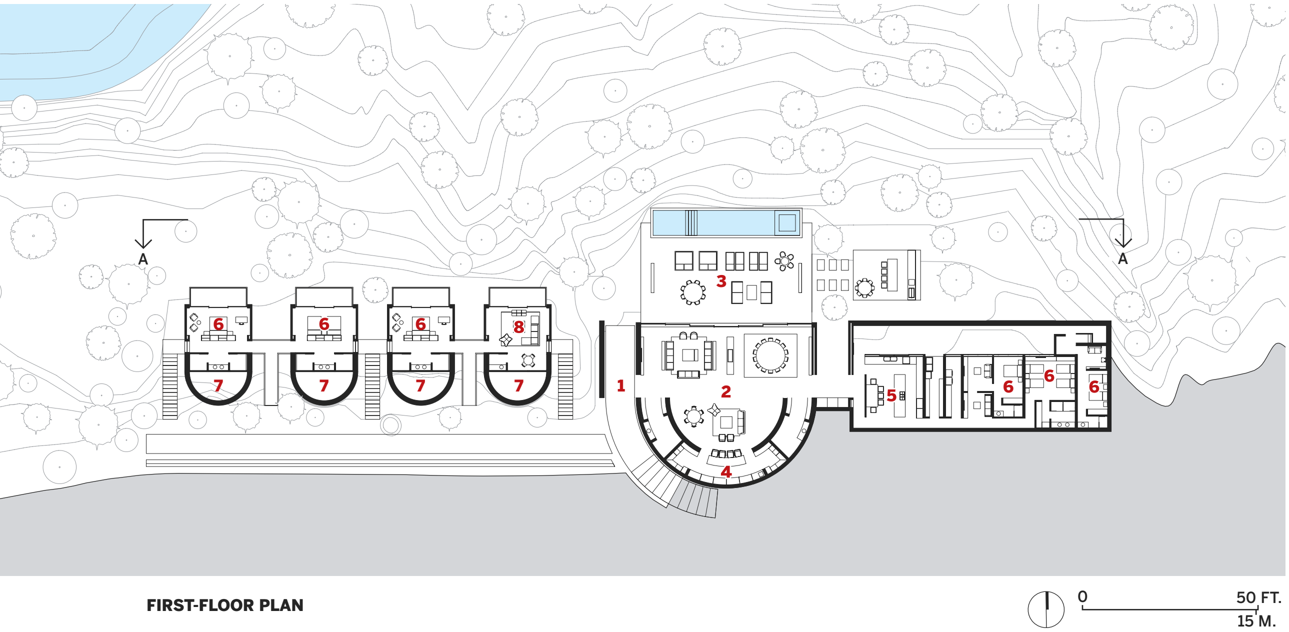


PHOTOGRAPHY: © OSCAR CABALLERO, EXCEPT AS NOTED.



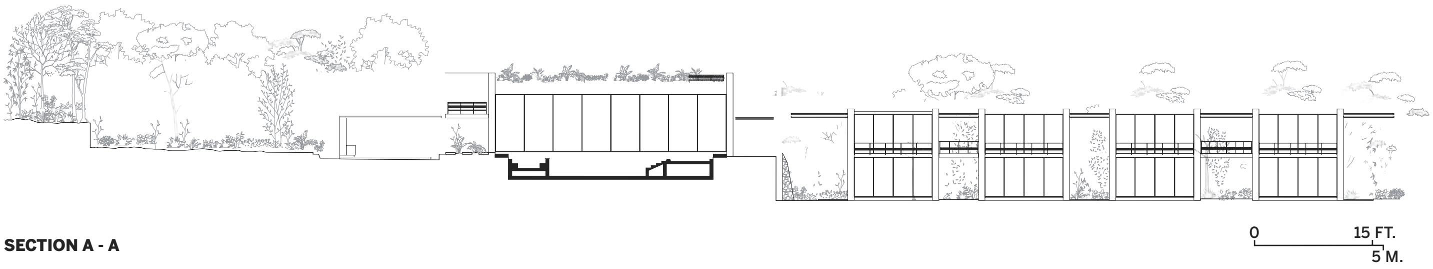
shaded by spindly oyamel firs. The first contains service areas, including a luminous kitchen, plus bedrooms; the second, a soaring common area; and the third, a pair of casual dens, one for adults and one for kids. The remaining three volumes, all duplexes, contain two bedrooms each, two of them shared among the kids and the remaining four for the adult couples. Save for the service module, the house's components repeat the same form, with blind lateral walls, a glazed west-facing facade, and a semicircular enclosure at the back to soften the structures' interaction with the hillside. Stone-paved stairs tumble down the slope between each module, connecting to a garden hemmed by a free-form wall assembled from rocks recovered during excavation. Liberally planted with succulents, ferns, and flowering wild kopieva, the wall resembles a low boundary between agricultural plots, like a remnant of some long-lost farmhouse. Within Sordo Madaleno's offices, the house is known as Rancho El Bosque, or Forest Ranch.

With all its circulation extracted from the built space and open to the elements, the



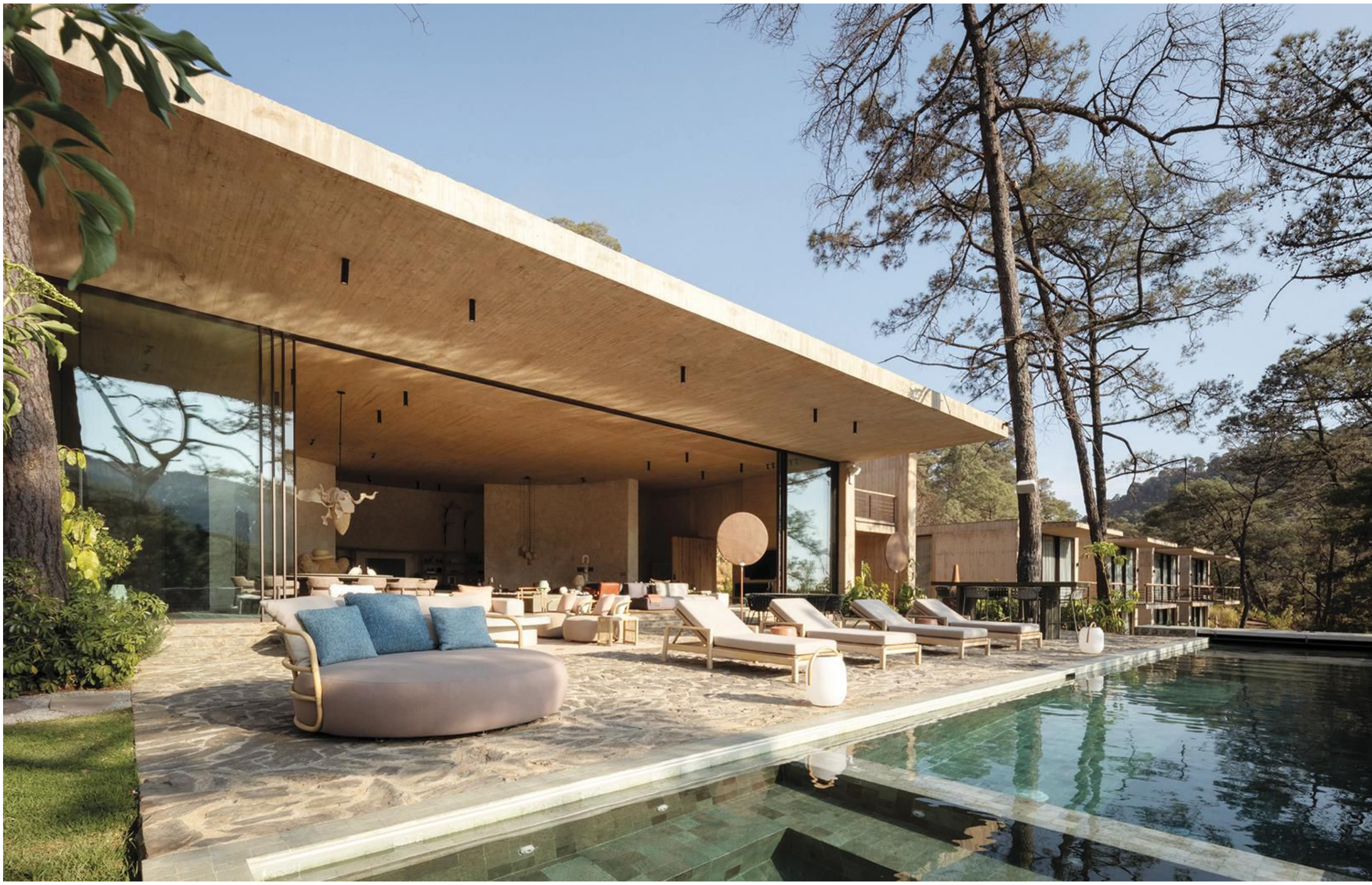
1	VESTIBULE
2	COMMON AREA
3	PATIO
4	BAR
5	KITCHEN
6	BEDROOM
7	VILLA
8	LOUNGE

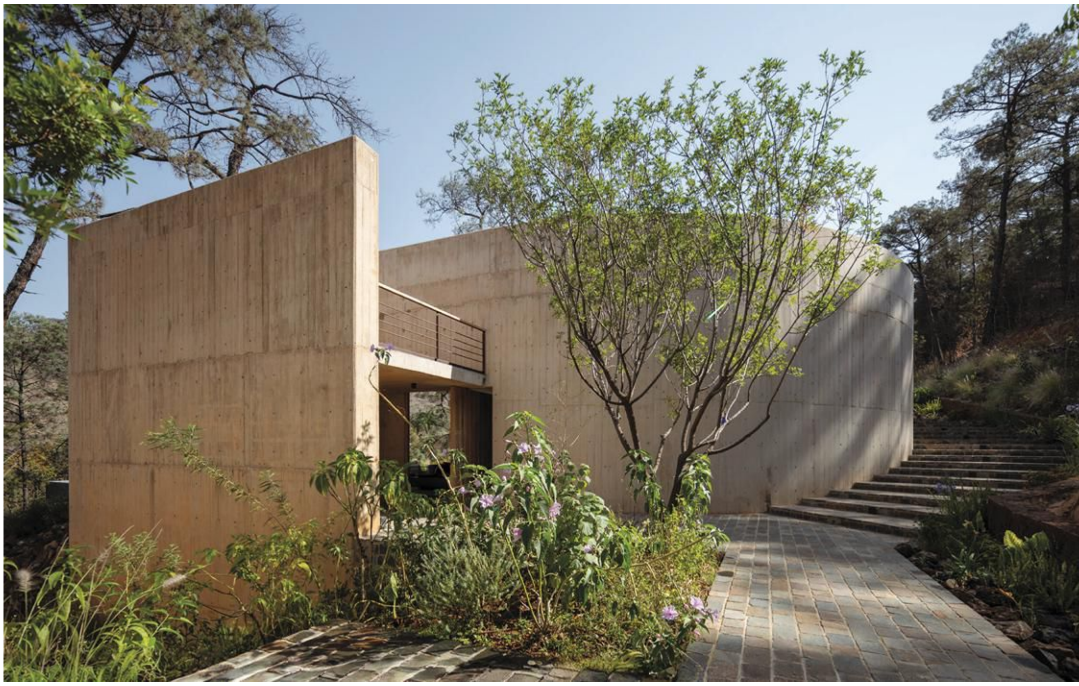
FIRST-FLOOR PLAN



SECTION A - A

PHOTOGRAPHY: © EDMUND SUMNER (TOP)

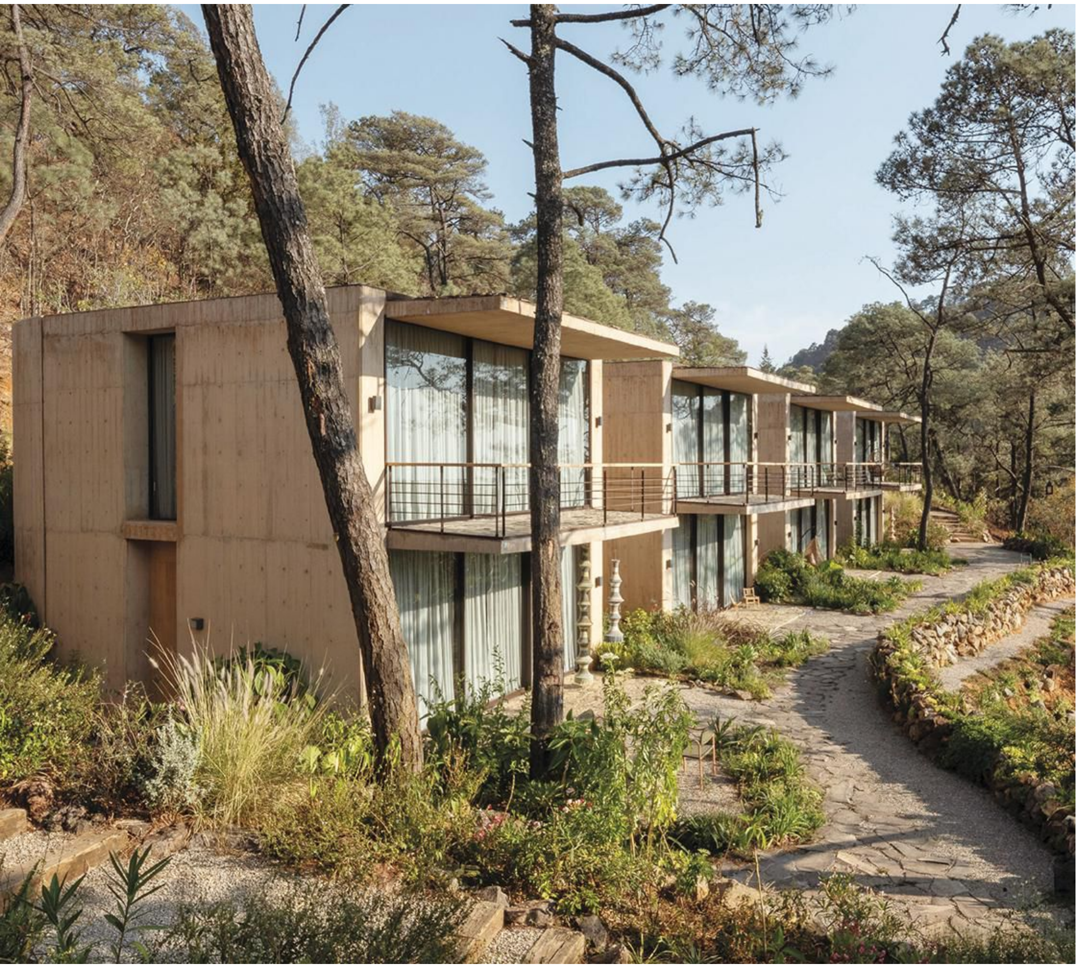


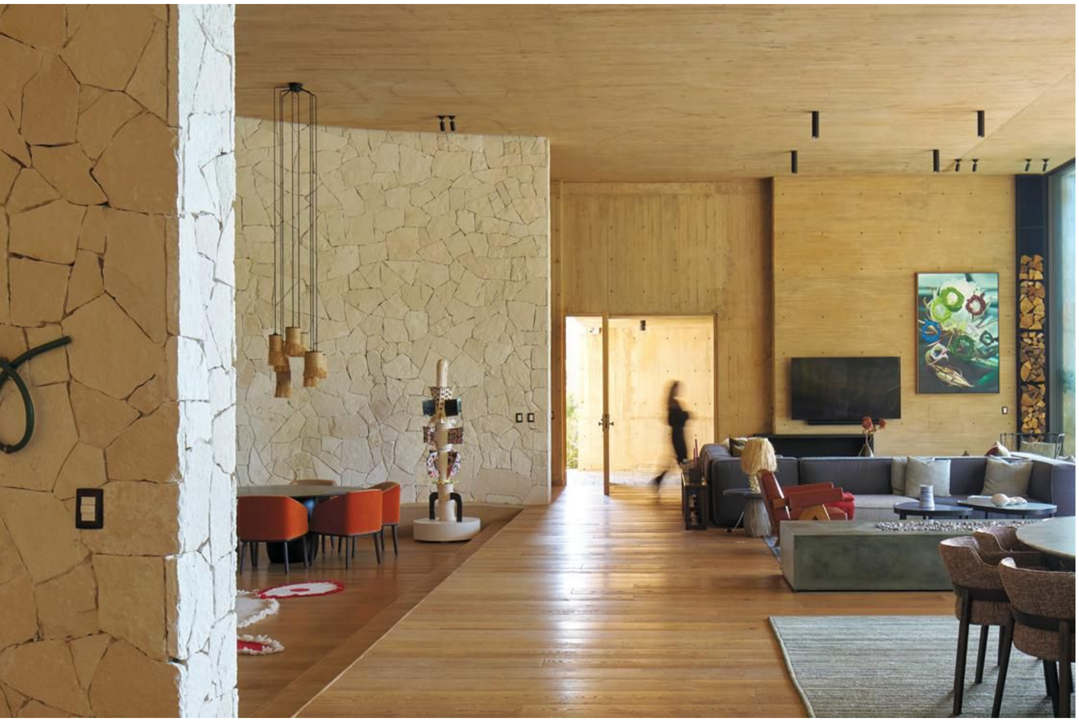


An outdoor stairway curves around the largest in a series of villas (opposite and right), leading to an expansive common area (above).

disarticulated house forces a close relationship to the elements, from the dry heat of late spring—when the surrounding woods turn a pale, dusty ochre—to the daily downpours and exuberant greenery of summer. “I don’t think the clients were expecting that at first,” Sordo Madaleno says, “but I want to design projects that don’t just sit as objects on the land.” Lovers of the outdoors, the family quickly agreed to the house’s unorthodox layout and lack of ceremony—the absence, for instance, of a front door or even a garage. “We weren’t interested in a language, we were interested in a strategy,” Sordo Madaleno says. “And nature was the protagonist.”

The approach to the nearly 8,000-square-foot house (not to mention its scale) seems, at least initially, to belie this attitude of humility. Located off a dirt road that passes just above the house’s roofline, Rancho El Bosque





The villas (left) offer privacy, but the family can reconvene in the common area (below, left).

comes into view as a stark composition in concrete: an arid plaza for parking framed by a single story of pale pink walls and focused on a voluptuous abstract bronze by Emilio Garcia Plascencia. A shallow stair descends around the back of the common area's volume, leading to a half-covered vestibule where a white oak door swings open to reveal the lofty 15-foot ceilings of the shared living space. A wall of white limestone, split in the middle to accommodate a bar, follows the curve of the structure's rear—tucked behind it are a pair of immense bathrooms and the wine cellar the clients requested—while the front opens entirely to a cinematic view of the forest draped over the sloped shoulders of an extinct volcano. A 16-foot-deep overhang allows the family to keep the floor-to-ceiling sliding doors open even in heavy rain.

Sordo Madaleno's design for Rancho El Bosque did not end at the boundary of its built area. Instead, they approached the plot as a master plan in miniature, unspooling a network of trails between fragrant pines and gnarled live oaks. Wooden footbridges span seasonal brooks and ravines, connecting a sequence of clearings: a half-court for basketball, a kitchen garden, a manmade pond, a shaded picnic area—products of ideas that emerged as the architects and clients traversed the terrain together. "It was incredible to walk the site, to see the color of the soil. It all became inspiration," says Sordo Madaleno. The office's strategy of integration is clear from inside the forest: the house disappears entirely, submitting to the landscape that determined its form. ■

Michael Snyder is a Mexico City–based freelance reporter on architecture, food, and travel and a contributing editor at T: The New York Times Style Magazine.

Credits

ARCHITECT: Sordo Madaleno

ENGINEER: AdE ingeniería (structural)

CONSULTANTS: Gabayet 101 Paisaje (landscape); Interiores 0503 (interior design)

CLIENT: withheld

SIZE: 7,910 square feet

COST: withheld

COMPLETION DATE: June 2024

Sources

STRUCTURE: Cemex

GLAZING: Val & Val

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Making the Grade

In Studio refashions a historic Manhattan schoolhouse as a tutoring center with a variety of learning spaces.

BY LEOPOLDO VILLARDI

LIKE MANY of my childhood friends, I juggled a handful of side jobs while in high school. One such gig involved tutoring younger peers in algebra and geometry. Every student learned a little differently, and each had a preferred meet-up spot. One liked to sit side by side at the kitchen table in his home; another favored the muted din of the town library; and yet another would always want to commandeer an empty classroom after school.

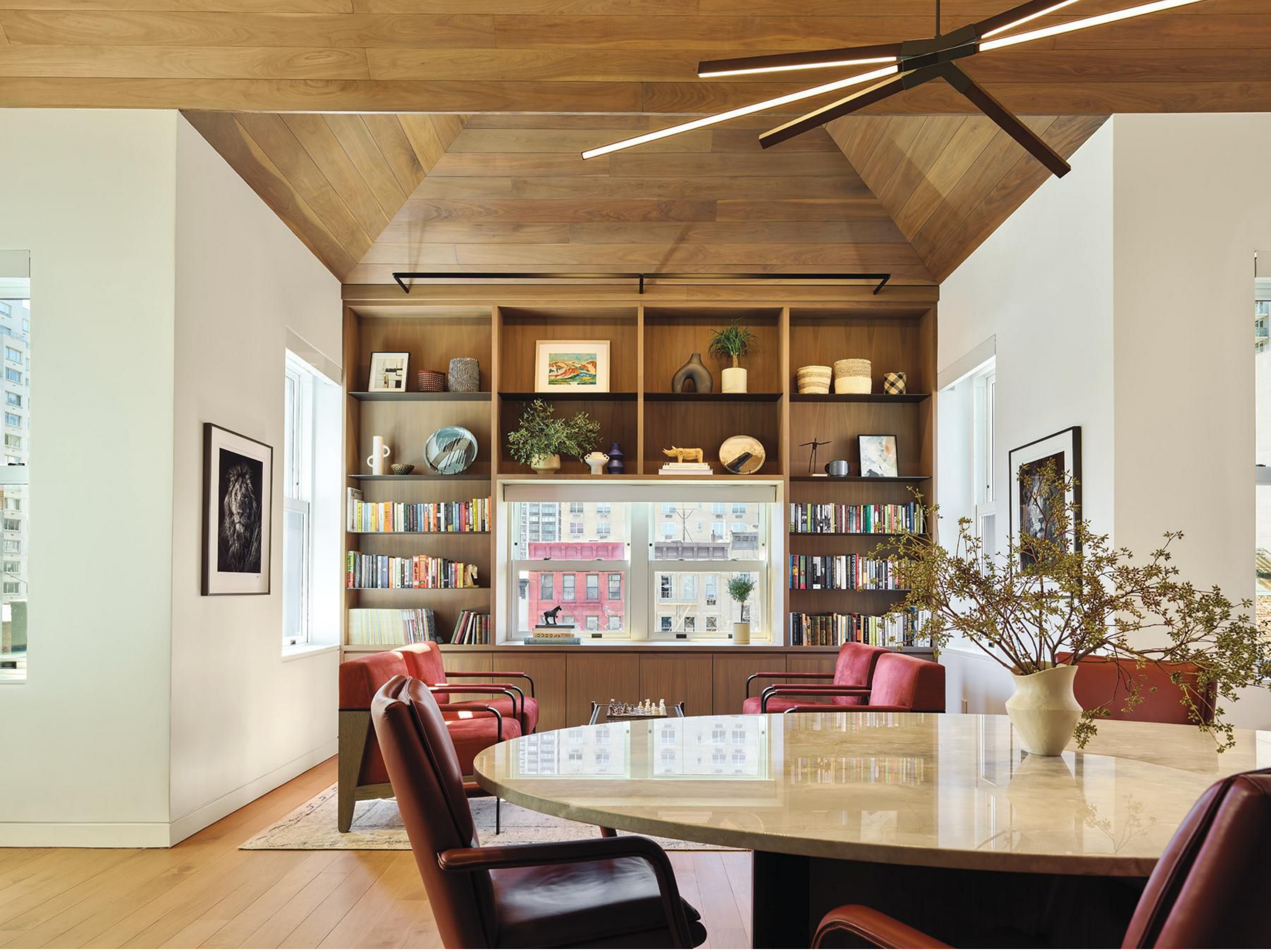
Advantage Testing, an international tutoring and exam-prep provider, understands well the need for world-class instructors to be adaptable and to instill confidence. For nearly 40 years, the company has leased independent spaces for teaching, brought services directly to students' residences, and, long before it permeated our everyday lives, used videoconferencing tools to connect with those farther afield. While remote and at-home tutoring is still very much a part of Advantage's repertoire, with the recent opening of its first purpose-built tutoring center—fittingly inside a former schoolhouse on Manhattan's Upper East Side—the company has both consolidated its New York operations and, with the help of architecture firm In Studio, created a host of varied learning spaces all under one roof.

"We wanted the students, who have been in a classroom environment all day, to have a space that feels warm, inviting, inspiring, and social, but still quiet enough to be productive," says Francine Alagappan, who served as client rep and as a consultant for the renovation. "We encourage them to treat this place as an extension of their own home—to come early and settle in, or to stay a bit longer and hang out."

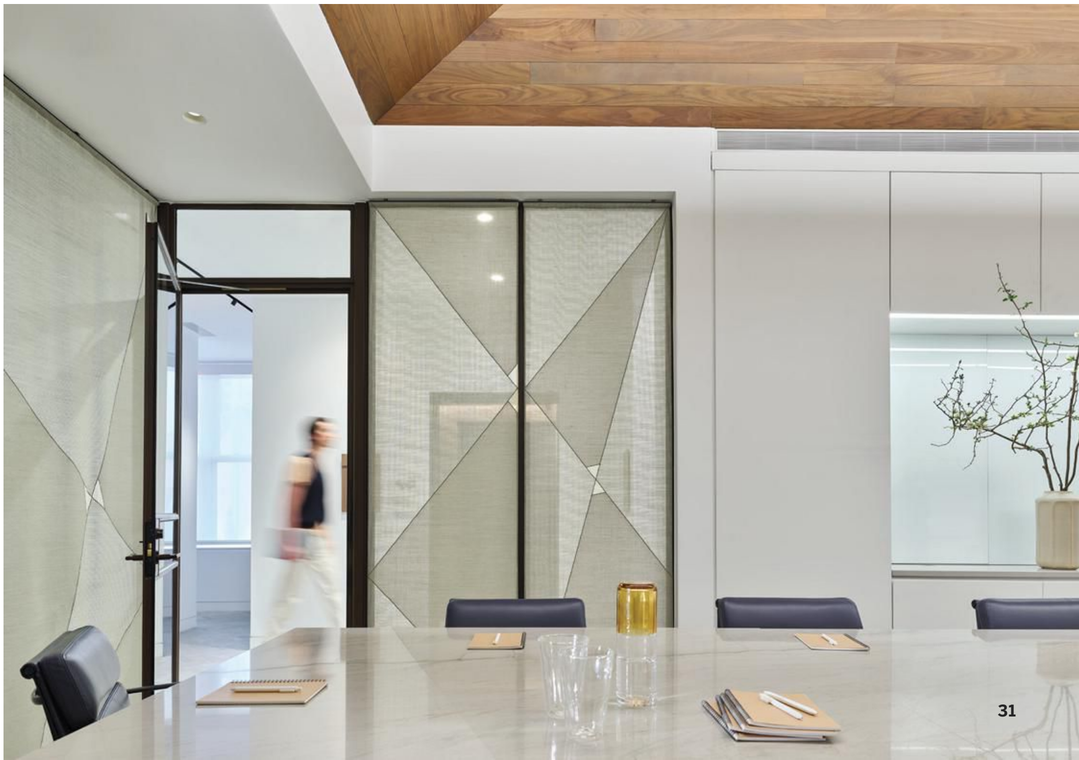
The four-story redbrick building, with its crowstepped gable and a sampling of straightforward Gothic flourishes, indeed confers a certain academic charm without being too imposing. The schoolhouse, originally built in 1891, was one of about a dozen designed by Vaux & Radford for the Children's Aid Society, an organization founded in the 1850s that still provides social services for the city's poor and homeless children. (Calvert Vaux is perhaps best known for collaborating with Frederick Law Olmsted on Manhattan's Central Park and for designing many of the urban oasis's architectural features). And, with the support of two benefactresses—sisters Serena and Julia Rhinelander—this particular outpost became the Rhinelander Industrial School, which taught vocational skills.

But present-day looks are deceiving. After the building was sold in the 1950s, the fanciful brickwork, in dire need of repointing, was parged with stucco instead. A bustle to the east, fronted with a large ornamental cartouche, was razed in the late 1980s to make way for a condominium on an adjacent parcel. As the building traded owners, the interiors were repeatedly chopped up and reorganized. By the time Advantage purchased it in 2016, the term *fixer-upper* may have been something of an understatement.

Refreshing the structure's exterior, and reconfiguring the inside to make the most of



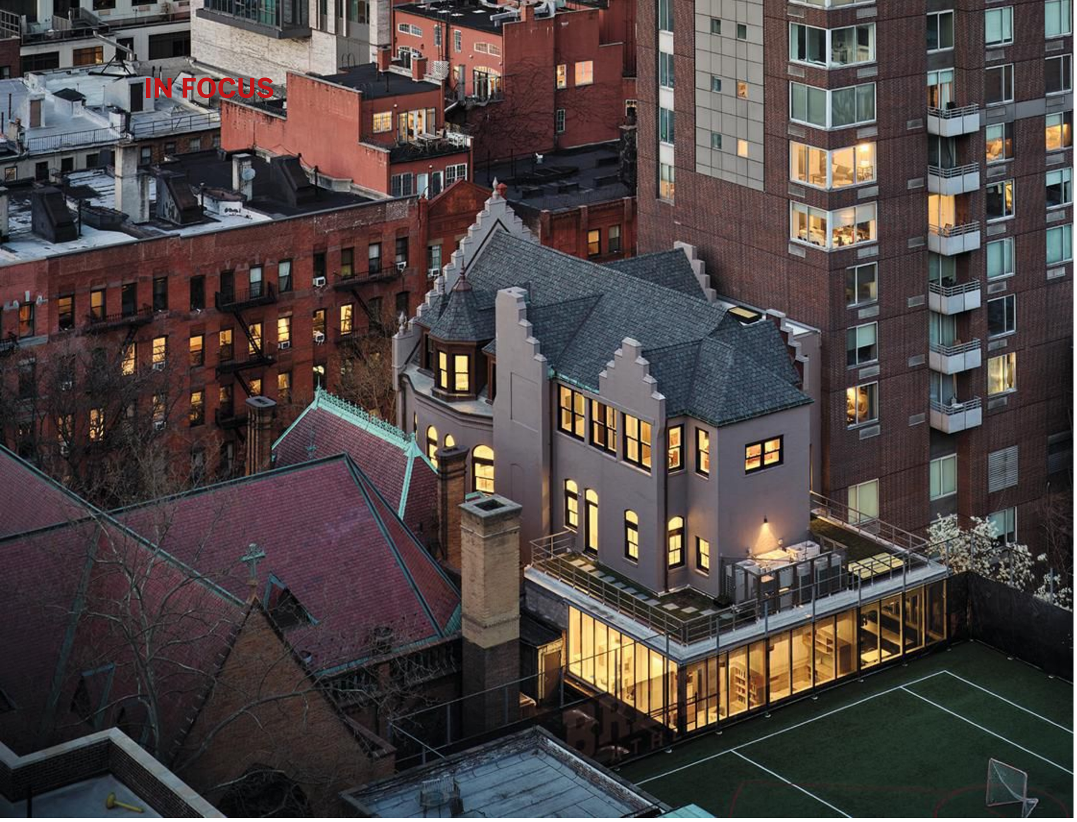
The historic building (opposite, left) has been fitted out with a new lobby (opposite, right), offices (above), and a boardroom (right).



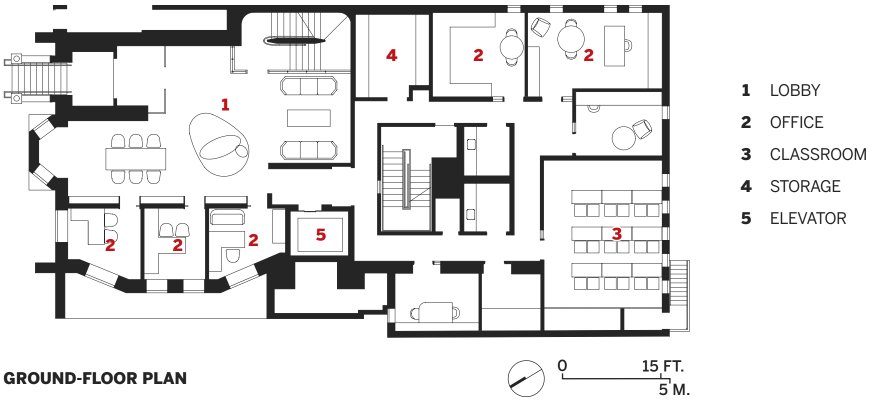
a relatively small footprint, fell to In Studio founder Martin Finio. It was the transformation by his former firm, Christoff:Finio, of a narrow five-story townhouse as the headquarters for the Heckscher Foundation (RECORD, June 2008) that convinced Advantage stakeholders to hire the firm. "When I walked into that space, the footprint felt bigger than it probably was on paper," says Alagappan. "If that could be achieved there, it would be pretty amazing what we could accomplish at the scale of our building." And, with a portfolio of residential projects, Finio had the know-how to introduce domestically scaled elements to the 18,740-square-foot structure and maintain an intimate ambience.

Although Finio wished to restore the exte-

PHOTOGRAPHY: © FRANK OUDEMAN



The architects enclosed a rear terrace (left) to create a cafeteria and lounge (opposite, top). Both stairs feature custom metalwork (opposite, bottom left and right).



GROUND-FLOOR PLAN

rior brickwork, as he explains, forensic probing revealed that removing the stucco would have taken the brick face with it. "It was just that much beyond repair." Today, the exterior has been scored and resealed to roughly emulate brownstone. An added stoop (the original entrance was off to the side) was refinished to finesse the entry sequence and allow guests to walk by an original facade panel emblazoned with a large sculptural R (for Rhinelander). The lobby—"somewhere between an apartment and a collegiate library" in feeling, says Finio—welcomes students and serves as a place, Alagappan points out, where parents can comfortably send a few e-mails while waiting to pick up their kids.

The removal of a 2-foot-thick load-bearing brick wall near the center of the building (while steel framing was simultaneously erected) helped to free the floor plan, and excavation beneath the building created another usable level. Two staircases, which double as emergency egress, create a circuit throughout the building. The more public one corkscrews up around a lenticular wall, jacketed in slick, oil-rubbed bronze panels. The second stairwell, more tucked away, takes a different tack, with guardrails comprising tricolored metal sheets, cut like Indian *jali*.

Each floor is lined with offices (most assigned to senior tutors; others can be reserved on an as-needed basis) for one-on-one instruction, but there are also a handful of small classrooms and conference rooms for group and practice-exam sessions. Shared tables and furnishings dot the plan, serving as impromptu meetup locations. On the second floor, a bright cafeteria and lounge, created by enclosing a rear terrace with a minimal curtain wall, adds to the tutoring center's more residential scale. With banquette seating and an island, it's akin to a large, shared kitchen. Here, underfoot, limestone tiles take the shape of a tessellated pentagonal pattern often seen in Mughal architecture—again playing up the client's interest in geometry.

But the crown jewel is the top floor, where much of the ceiling, lined with walnut planks, crests and dips in tandem with the schoolhouse's many peaks and gables. Offices feature one-off architectural elements—an eyelid dormer in one, a turret in another—with pleasant views of the slated roof and chimneys of the Church of the Holy Trinity next door. There is also a new boardroom for Advantage's philanthropic arm, a foundation that offers pro bono instruction to high schoolers from underserved and underrepresented backgrounds, who are also welcome to use the tutoring center.

With college acceptance rates as low as ever, students today face immense pressure to hit the books after hours and hone their competitive edge. Although many, perhaps out of habit or convenience, have come to prefer remote or hybrid supplemental instruction, "We've observed that in-person sessions bring out a unique energy and rhythm that can be difficult to replicate," says founder (and Alagappan's husband) Arun Alagappan. "The tutoring center feels like a lounge and a community hub for them as much as a workplace for us—which is exactly what we hoped it would be." ■

Credits

ARCHITECT: In Studio

ENGINEERS: DeSimone Consulting Engineering (structural); NY Engineers (m/e/p)

CONSULTANTS: Li-Saltzman Architects (preservation); Project Control Group (project manager); One Lux Studio (lighting)

GENERAL CONTRACTOR: Marlboro Group International

CLIENT: Advantage Testing

SIZE: 18,740 square feet

COST: withheld

COMPLETION DATE: January 2025

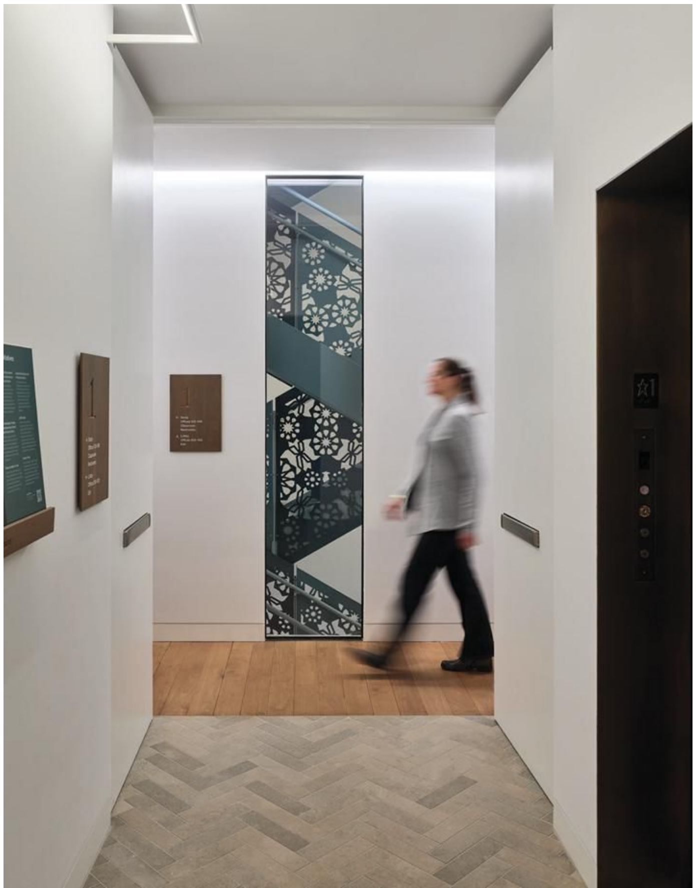
Sources

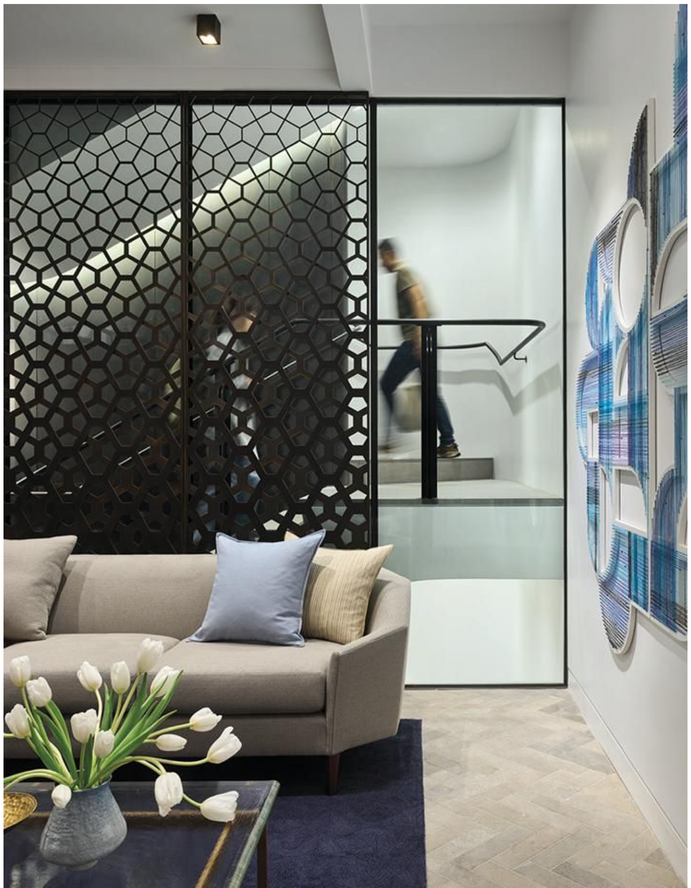
CURTAIN WALL: Technical Glass Products

WINDOWS: Parrett, Optimum

GLAZING: Solar Innovations, Saint-Gobain

INTERIOR FINISHES: Metalform Studio (metalwork); Armstrong (acoustical ceilings); Logan (millwork); Benjamin Moore (paints); Carlisle (flooring)





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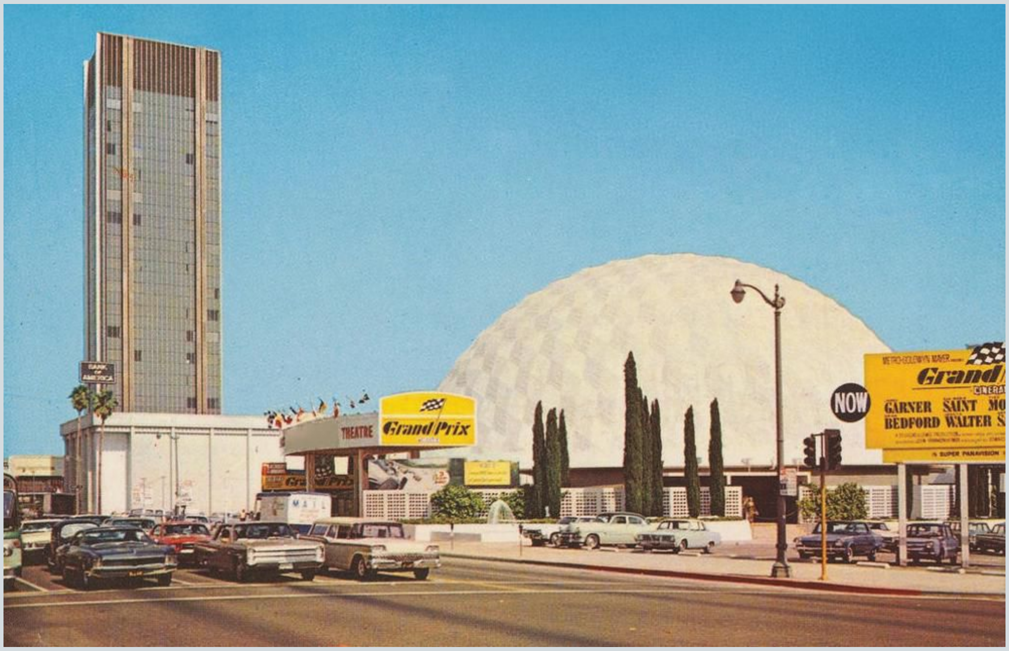
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▶ TAKE A LOOK ON PAGE 45

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Introducing the 2025 Women in Architecture Awardees

BY MATT HICKMAN

Gina Bocra

Emily McGlohn

Chandra Robinson

Roberta Washington

Cynthia Weese

RECORD is pleased to announce the 2025 recipients of the Women in Architecture Design Leadership Awards. Celebrating its 12th year, the program acknowledges and promotes the accomplishments of women in the profession. The 2025 laureates will be honored at a ceremony held on September 9 at Mies van der Rohe's S.R. Crown Hall on the Chicago campus of the Illinois Institute of Technology; the following day, RECORD will host the latest Sustainability in Practice conference at the same venue. Featured speakers at that event will include Chicago's own Jeanne Gang, an inaugural Women in Architecture Awardee.

The five newest honorees, joining nearly 60 design leaders recognized since the program's launch, are: Gina Bocra, Emily McGlohn, Chandra Robinson, Roberta Washington, and Cynthia Weese. This year's jury comprised past awardees Carol Ross Barney (2022) and Anne Marie Duvall Decker (2023); Julie Hiromoto, partner and director of integration at HKS; climate leader and strategist Yasemin Kologlu; and Mark Gardner of Jaklitsch/Gardner.

Bocra, vice president with the Built Ecology team at WSP, has been a champion for high-performance safe and resilient buildings that contribute to the health and well-being of their occupants throughout her 30-year career. Prior to her role at WSP, she helmed the New York City Department of Building's team tasked with implementing and enforcing the city's sustainability laws and codes, including Local Law 97, the city's landmark set of carbon-emissions regulations. Bocra also served as director of Sustainable Design at two architecture firms and has volunteered with organizations including the AIA, U.S. Green Building Council, and the International Code Council.

A registered architect in Virginia and Alabama, McGlohn is an associate professor in the School of Architecture, Planning and Landscape Architecture at Auburn University. Dedicated to supporting architectural practice through design-education excellence, she teaches the third-year design studio at Auburn's Rural Studio in Newbern, Alabama, and serves as the program's third-year-curriculum coordinator. According to McGlohn, teaching at Rural Studio and working with students to construct homes for the local community has helped her intimately understand, and therefore critique, contemporary building enclosures, residential design, and client engagement. Developing methods to encourage empathy and observation is another focus. She is currently working with engineers from the University of Alabama and University of South Alabama to address an urgent wastewater problem in rural areas of the South with a decentralized-treatment approach. Rural Studio will be the pilot location for the first system.

Robinson, a past Women in Architecture Awards juror, is a principal at Portland, Oregon–based Lever Architecture, whose Highland Hall at the University of Oregon Portland campus appears on page 80. With the firm, Robinson completed Meyer Memorial Trust's LEED Platinum headquarters (RECORD, March 2021) as part of an all-women design-and-development team, and is working with communities on transformative designs for affordable housing and libraries. A member of the Portland Design Commission, a founding board member and treasurer of the National Organization for Minority Architects (NOMA) Portland chapter, and an advisory board member of Hip Hop Architecture Camp, Robinson describes herself as passionate about creating beautiful spaces that are accessible to all and enjoys working with clients to create designs that express their values.

Washington established her Harlem-based architectural practice in 1983 after several years spent designing health facilities and schools in Maputo, Mozambique. Her firm's projects include the interpretive center at the African Burial Ground National Monument in Manhattan and public schools in Brooklyn and Mount Vernon, New York, and in New Haven. Washington has also researched, written, and lectured about the history of New York State's earliest African American architects and the nation's first Black women architects. Washington has served on the New York City Landmarks Preservation Commission and as president of both the New York AIA Foundation and NOMA. She is currently on the boards of the NOMA Foundation and the historic-preservation group Save Harlem Now!

Last profiled following her 2023 AIA Chicago Lifetime Achievement Award win (RECORD, October 2023), Weese is a founding partner of Weese Langley Weese, established in 1977 alongside husband Ben Weese. Her projects at the firm include Chicago's Chestnut Place Apartments, the Kraft General Foods Education Center at the Art Institute of Chicago, and recent work at the University of Chicago and Northwestern University. Weese has close ties to her alma mater, Washington University in St. Louis, where she served as professor and dean of the School of Architecture from 1993 to 2005. She was the first woman to be named dean of any school at the university. Weese is a past president of AIA Chicago and founding member of Chicago Women in Architecture and the Chicago Architectural Club, serving as president of the latter. ■

PHOTOGRAPHY: © STEPHEN E. GROSS (BOTTOM, RIGHT)

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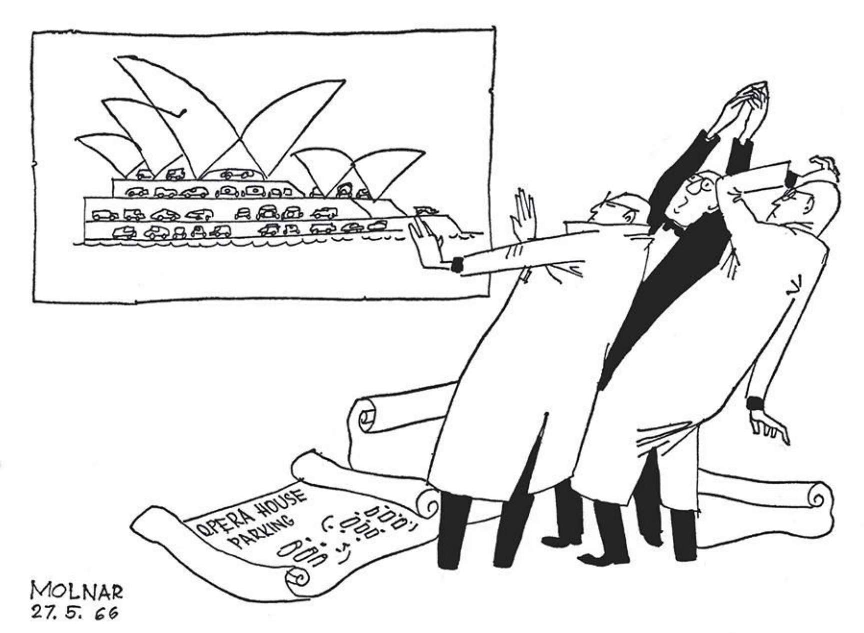
Comic Strip Criticism

Are architects too serious? Caricatures and cartoons might offer a way to enliven discourse and elicit a few laughs, writes **Gabriele Neri**.

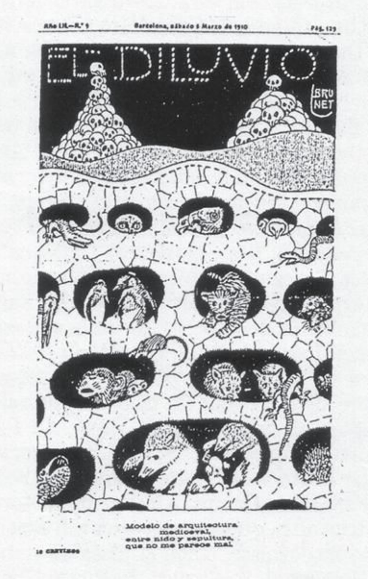


No, No! We must resist temptation. We must!

ARCHITECTURE IS, without question, a serious matter—and, over the centuries, some of the most serious voices in the field have endeavored rigorously to theorize about, define, and interpret it. But what happens when we confront this monumental gravitas through the levity? What if we momentarily set aside the lofty and arcane discourse of celebrated architects and professional critics, and instead turn our attention to satire, humor, irony, and parody? What if, rather than revisiting Palladio's *Four Books of Architecture*, we explored the 4,000 or so cartoons that have ridiculed architecture through the ages?

From the 18th century onward—albeit with notable antecedents in earlier periods—an abundant and unrelenting torrent of satirical imagery, including caricatures, cartoons, comic strips, photomontages, animated films, and, more recently, digital memes, has critically engaged with the transformation of the built environment. It proliferated, first, by the advent of illustrated periodicals and the rise of print culture, and then via broadcast television and the internet, thereby both reflecting the emergence of a mass audience and enhancing public debate about architecture. This heterogeneous corpus of visual material—varied in form, tone, and intent—can be seen as a formidable counterpoint to the history of architecture.

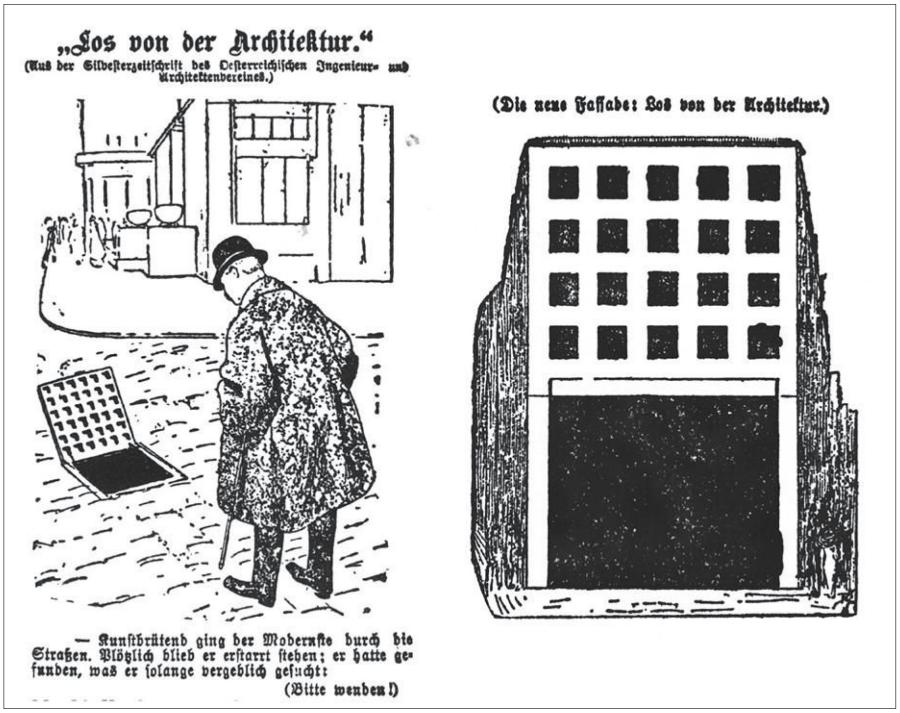
Some examples? In 1824, in London, an insolent caricature by the great artist George Cruikshank depicted the celebrated architect John Nash impaled on the spire of his own All Souls Church at Langham Place, guilty of having created "a disgrace," as one member of the House of Commons called it. Still in London—but also in Paris, Rome, and elsewhere—numerous cartoonists anthropomorphized industrializing cities, showing them assaulted, violated, or "disemboweled" by the megalomania of urban planners and politicians. Not to mention New York, where satire on the skyscraper—from Thomas Nast to Saul Steinberg—first predicted and then exaggerated the debate around the "monstrous" skyline. In Barcelona, the masterpieces of Antoni Gaudí, due to their bizarre geometries, were portrayed as animal enclosures (and today those cartoons recall the meandering, cavernous interiors of the Gilder Center in Manhattan!). In Germany, during the Bauhaus years, many cartoons showed ultramodern yet uninhabitable houses: a family having supper with open umbrellas because their flat roof leaks, Breuer-inspired steel furniture needing to be hung on and warmed by radiators because it is freezing to the touch, and a total ban on any kind of decoration. If ornament is a crime, as Adolf Loos claimed, then it could be punishable by a prison sentence. In one chilling cartoon, artist Thomas Theodor Heine depicts a Bauhaus professor cutting off the ears of himself and his family—including the dog—since those appendages too could be deemed useless adornments.


Año LII.—N.º 9
Barcelona, sábado 5 Marzo de 1910
Pág. 129
EL DILUVIO
BRUNET
Modelo de arquitectura medioeval, entre nido y sepultura, que no me parece mal
10 céntimos

Loos, himself a skilled polemicist, was the subject of a famous caricature that portrayed him hunched over a humble manhole cover—implied by the cartoonist to be the inspiration for his Goldman & Salatsch Building (today known as Looshaus), which indeed appears rather bare and geometric compared to Fischer von Erlach's ornate Hofburg just across the street. During the Fascist era, the Italian magazine *Il Selvaggio* mocked modern architecture by depicting a woman (Italy) in distress with a stomach full of boxlike buildings—she had suffered an "indigestion of rationalism." If the Sydney Opera House looked like a turtle orgy, the Parisian Centre Pompidou resembled an oil refinery, and Breuer's Whitney Museum evoked anything but what it actually was: "Why can't they design a museum that doesn't have to be explained?" asked the illustrator Alan Dunn, who generously contributed to *The New Yorker* but also to ARCHITECTURAL RECORD, where he published one cartoon every month for nearly 40 years. For his work, he was awarded the 1973 Architecture Critics' Citation

George Molnar's *Opera House Parking* (1966) depicts a trio fantasizing about adding parking to the Sydney Opera House (above). Llorenç Brunet depicted Gaudí's work as a series of cavernous spaces (left).

IMAGES: © THE SYDNEY MORNING HERALD (TOP); EL DILUVIO (BOTTOM)



„Los von der Architektur.“
(Aus der Silveſterzeitſchrift des Oeſterreichiſchen Ingenieur- und Architektenvereines.)

— Kunſtbrütend ging der Modernſte durch die Straßen. Plötzlich blieb er erſtarrt ſtehen; er hatte gefunden, was er ſolange vergeblich geſucht:

(Bitte wenden!)

(Die neue Faſſade: Los von der Architektur.)

by the American Institute of Architects, formally sealing the bond between cartoon and criticism.

Among the most enduring targets of architectural satire are modern houses: glass boxes that overexpose their occupants, lightweight dwellings blown away by the wind, prefab abodes that resemble tin cans, flat-pack structures that are seemingly impossible to assemble, and micro-units where the bed and the bathtub inhabit the same space. Placed beside the pompous declarations of architects and developers, the contrast is striking. However, satire and humor have manifested in many forms beyond cartoons, including cinema (Buster Keaton's nightmarish kit house in *One Week*, Jacques Tati's alienating urban landscape in *Playtime*) and literature (from Jonathan Swift's written satire against the English architect and dramatist

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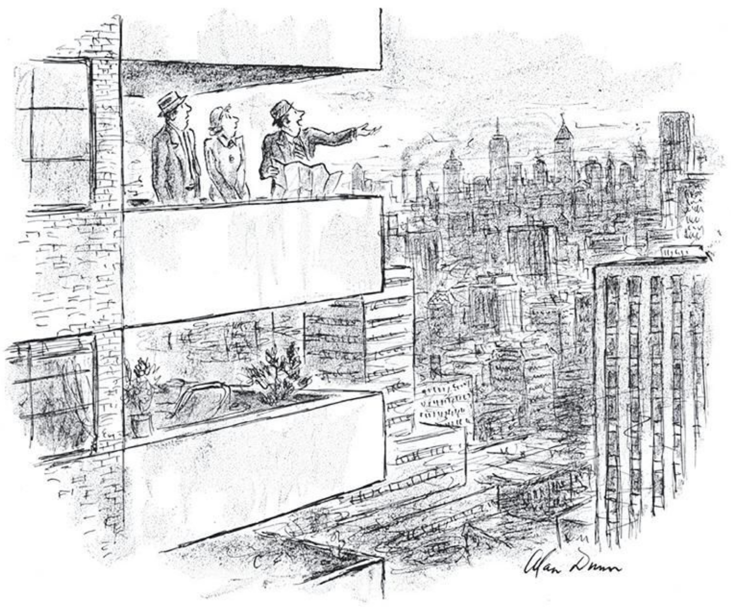
Los von der Architektur **(1911) implies that Adolf Loos's inspiration for his Goldman & Salatsch building was a manhole cover (opposite). Record contributor Alan Dunn drew a cartoon every month for 40 years (right).**

John Vanbrugh to J.G. Ballard's *High-Rise* dystopia). And, of course, Flaubert: "Architects. All idiots. They always forget to put in the stairs."

Indeed, the persona of the architect emerges as a recurring theme of derision, portrayed in multiple guises: the one who designs as a sculptor (in a famous episode of *The Simpsons*, Frank Gehry crumples a sheet of paper that becomes the form of a concert hall) or like an engineer (mass-producing bland, blocky buildings); the professional subordinated to market forces; or the lackey of power. In the hands of the cartoonist, the solemn figure of the architect—such as Paolo Veronese's dignified portrayal of Vincenzo Scamozzi clutching a Corinthian capital—gives way to irreverent caricature. A striking example is Sean Delonas's cartoon depicting Daniel Libeskind with a set square, ruler, and drawings inserted into his derrière—a scathing jab at the controversies surrounding his involvement in the rebuilding of Ground Zero.

Moreover, tiny drawings illuminate the many other



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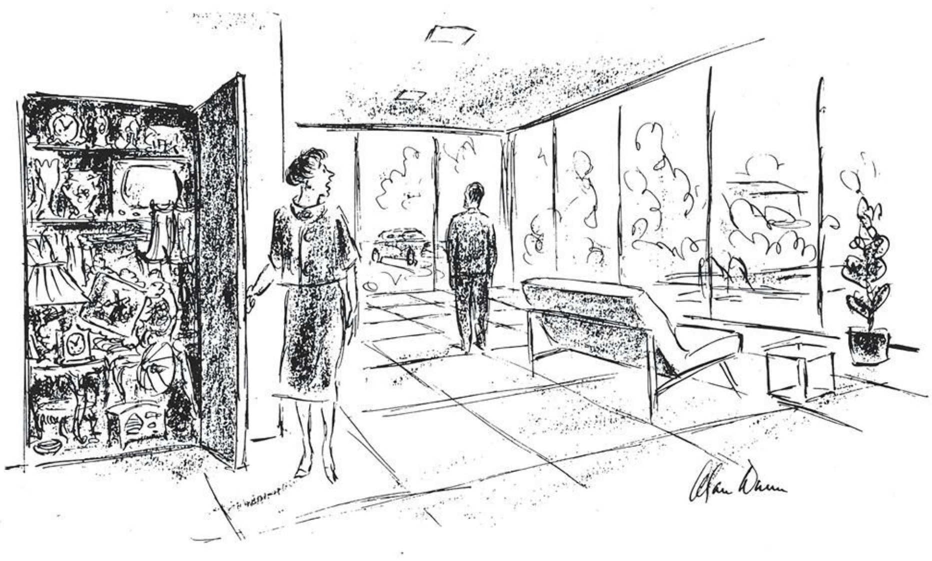

"Have the photographers gone?"

Dunn, known for his wit, here depicted a minimal interior staged for photography, while the clients' everyday belongings have been stuffed into a closet (left).

IMAGE: © ARCHITECTURAL RECORD

stakeholders involved in the construction process—clients, inhabitants, laborers, and developers—offering alternative perspectives on architecture. They have also foregrounded broader societal issues, from the role of women in domestic space—oscillating between stereotype and emancipation—to considerations of public health, housing, and the environment. Through cartoons, architectural discourse opens itself to the realities of its social entanglements.

But what can a guffaw—or even a giggle—contribute to the holy verb of sacred architectural texts? The apparent simplicity of the cartoon belies its complexity. Through synthesis, ellipsis, and distortion, visual satire distills

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layered messages that are simultaneously visual, textual, and ideological. And, by weaving together popular and intellectual forms of critique, these images often reach an audience broader than the one in the ivory tower, playing a pivotal role in shaping society's perception of architecture, then as now.

Of course, the perspectives offered by cartoons and caricatures are often ambiguous and contentious, since—as with any text or image—they are shaped by specific cultural dynamics and vested interests. A well-known case is the satire leveled against the Bauhaus: while it echoed genuine public dissatisfaction (as evidenced by the numerous lawsuits over leaking flat roofs and substandard materials in Frankfurt), it was also amplified by Nazi propaganda aimed at discrediting the entire project of Modernism. Beneath their apparent levity, such images have operated both as instruments of dissent and of propaganda—as seismographs of collective anxieties and as tools of institutional power; as irreverent critiques or, at times, complicit winks within the architectural elite.

Unlike architectural history and narrative chronicles written from within, cartoons reorient popular reception and dissent. Graphic satire allows us to trace a sort of counter-history of architecture, one that exposes the power dynamics, anxieties, and ironies produced by the sudden rise of an architectural modernity suspended between promise and threat, as Jean-Louis Cohen showed in the French Pavilion at the 2014 Venice Biennale, featuring a model of Villa Arpel from Tati's movie *Mon Oncle*, a cutting-edge plastic house that turns against its inhabitants.

And today? Targets certainly abound, as do the means of expression and communication—from the now old-fashioned yet still effective cartoon to the many forms that have cropped up on social media. Nevertheless, architectural satire does not appear to be enjoying its finest hour, mirroring a public discourse on the built environment that, today—perhaps disoriented by a broader process of cultural and media realignment—often seems to be gasping for air. We urgently need to take humor seriously, and laugh a little, both as an antidote to and a relief from the many dire challenges posed by the profession, and that face it. ■

Gabriele Neri is a historian, curator, and architect. He is the author of a forthcoming biography of RECORD *cartoonist Alan Dunn, to be published by the MIT Press.*

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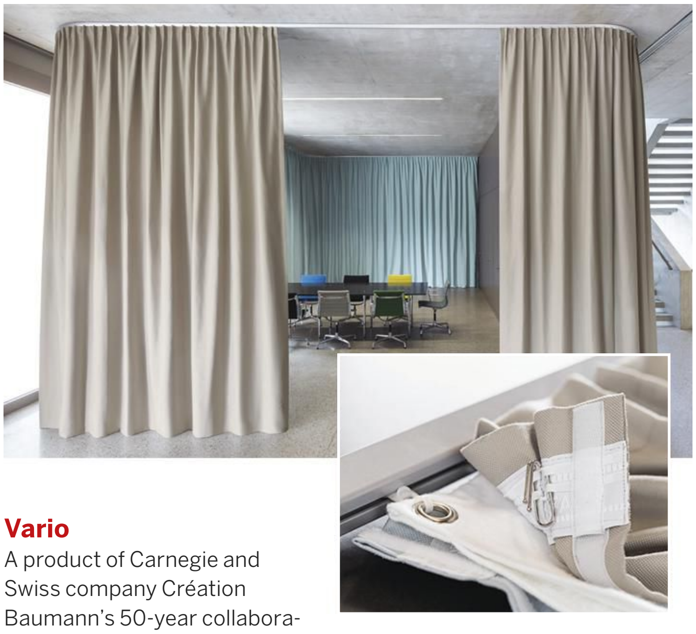
gan-rugs.com



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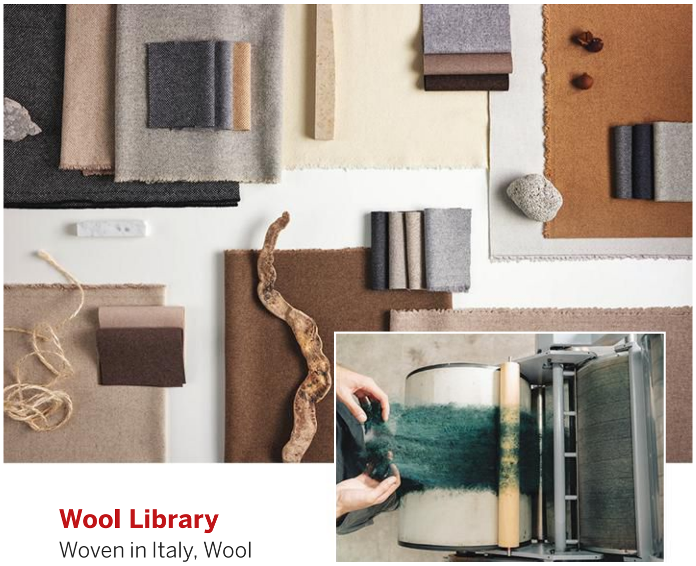
Wall/Pepper introduces Perlage, a shimmering addition to its catalogue of materials. The smooth pearlescent surface dances with light, casting lively reflections and shifting hues as the viewer moves. Every Wall/Pepper design—including Dandelion (pictured) can be printed on this fire-resistant, non-woven polyester using eco-friendly, UV-resistant pigmented inks.
wallpeppergroup.com

Econyl Bespoke

Aquafil has launched a new yarn collection spun entirely from pre- and post-consumer nylon waste. Econyl is engineered for stain resistance and lasting color, making it suitable for rugs and carpets of any size. It is available in three textures: ReLana and ReSata have the feel of wool, while Terra offers an alternative to natural fibers.
aquafil.com



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designtex.com

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wolfgordon.com

Cascata & Rilievi

Artist duo Draga & Aurel have designed two new themes for Wall&decò's Contemporary Wallpaper Collection. Cascata pours down in fine threads of pastel to capture the fluid grace of silk drapes, while Rilievi (pictured) brings a kinetic energy through broad, variegated strokes. Both patterns consist of a low-carbon, 100% bio-sourced ethylene substrate available in smooth and textured finishes.
wallanddeco.com

Dramatic Entrance
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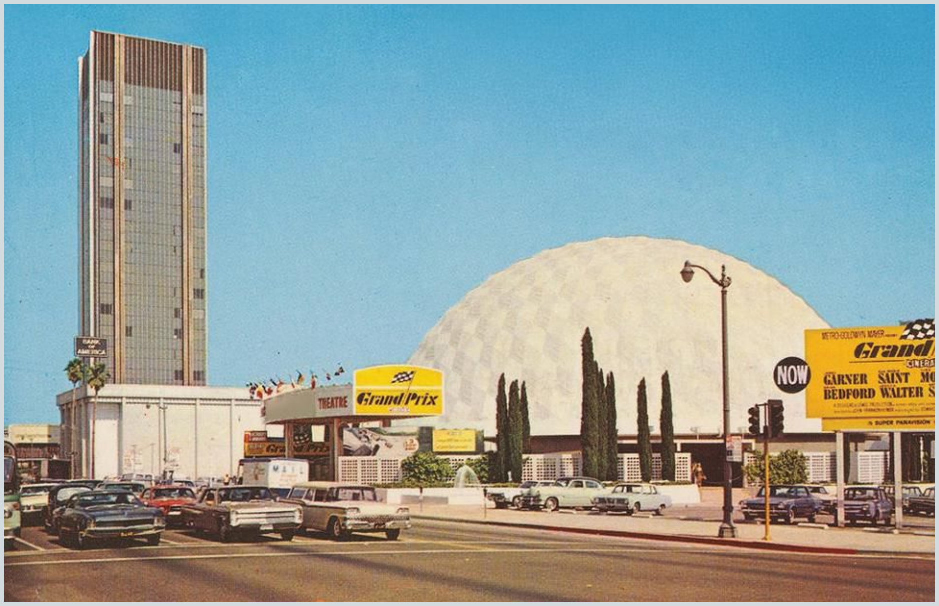

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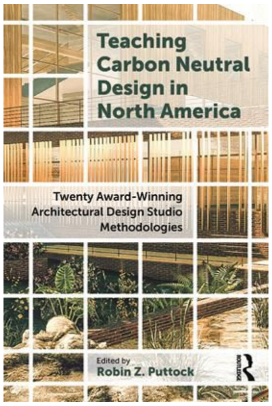
Record Editors Survey New Sustainability Titles


Teaching Carbon Neutral Design in North America
Twenty Award-Winning Architectural Design Studio Methodologies
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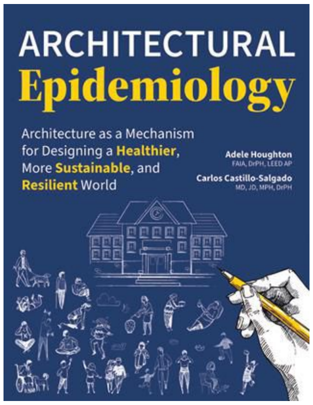
ARCHITECTURAL Epidemiology
Architecture as a Mechanism for Designing a Healthier, More Sustainable, and Resilient World
Adele Houghton FAIA, DrPH, LEED AP
Carlos Castillo-Salgado MD, JD, MPH, DrPH

Teaching Carbon Neutral Design in North America: Twenty Award-Winning Architectural Design Studio Methodologies, *edited by Robin Z. Puttock. Routledge, 323 pages, $44.*

A key strategy in combating the climate crisis is "to educate as many current architecture students as possible about the role of the built environment in carbon emissions," says Robin Puttock, an assistant professor at Kennesaw State University and a practicing architect, in *Teaching Carbon Neutral Design in North America*. Toward that end, the book compiles sustainable-design pedagogies from 26 studio instructors at architecture schools in the U.S. and Canada. The collection outlines each course, describing the philosophical rationale, teaching approach, use of analytical tools, and assessment methodology. With its diverse approaches aimed at students at a variety of levels, the book will help prepare the next generation of architects for the climate challenge ahead. *Joann Gonchar, FAIA*

Architectural Epidemiology: Architecture as a Mechanism for Designing a Healthier, More Sustainable, and Resilient World, *by Adele Houghton and Carlos Castillo-Salgado. Johns Hopkins University Press, 282 pages, $100.*

Co-written by an architect with a doctorate in public health and an epidemiologist medical doctor/lawyer, *Architectural Epidemiology* proposes a new transdisciplinary field encompassing design, real-estate development, and policy to combat the intertwined threats of climate change, chronic disease, and inequity. Intended for practitioners, academics, and researchers, it provides a framework for apply-

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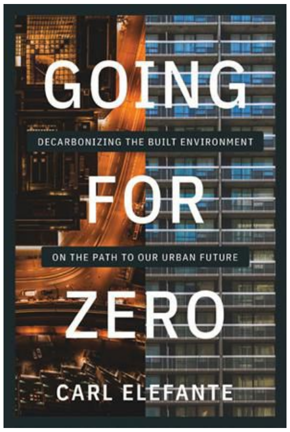
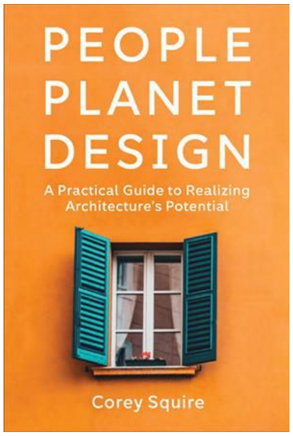
Photo: Johannes Zettel

ing design strategies that can support positive human- and environmental-health outcomes. With a textbook-like format, real-world case studies, and illustrated "toolboxes," the guide will help professionals from normally siloed disciplines better collaborate. *JG*


GOING
DECARBONIZING THE BUILT ENVIRONMENT
FOR
ON THE PATH TO OUR URBAN FUTURE
ZERO
CARL ELEFANTE


PEOPLE
PLANET
DESIGN
A Practical Guide to Realizing Architecture's Potential
Corey Squire

Going for Zero: Decarbonizing the Built Environment on the Path to Our Urban Future, *by Carl Elefante. Island Press, 296 pages, $32.*

"The greenest building is one that is already built," architect Carl Elefante proclaimed in 2004—a phrase as prescient then as it is relevant today. In *Going for Zero*, Elefante, principal emeritus at Quinn Evans, reveals the remark's origin and takes readers on an international tour of climate case studies, using Detroit's burgeoning midcentury population and economic collapse, and the subsequent demolition of some 20,000 buildings, as an illustrative opening act. Although adaptive reuse and renovation are increasingly embraced to address the climate crisis, he shows that there are ways to sustainably and responsibly build from the ground up too. Elefante untangles various climate accords, decodes a veritable alphabet soup of regulatory acronyms, and reminds us that centuries of regional knowledge were cast aside during industrialization. *Going for Zero* isn't a manual—it's a call to action for architects and related professionals alike. *Leopoldo Villardi*

People, Planet, Design: A Practical Guide to Realizing Architecture's Potential, *by Corey Squire. Island Press, 392 pages, $40.*

Corey Squire hopes to reinvigorate the current state of architectural practice. Director of sustainability at Bora Architects and a lead author of the AIA Framework for Design Excellence, Squire translates his experience into a prescriptive approach for human-oriented, eco-conscious buildings in this book. A critical diagnosis of the profession lays the groundwork for historically informed, data-driven strategies for 10 building systems and elements—from scale and windows to user behavior. Whether you are a seasoned architect or an aspiring student, this compendium

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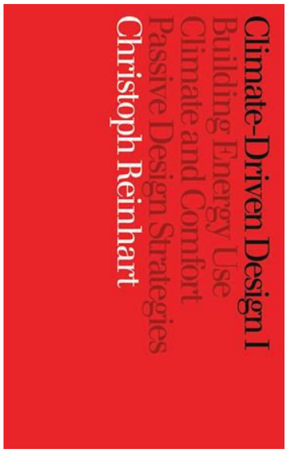
of practical advice will be your go-to for making sustainable choices. *Peter Xu*

Creating the Regenerative School, *by Alan Ford, Kate Mraw, Betsy del Monte. Oro Editions, 376 pages, $50.*

Since Alan Ford's *Designing the Sustainable School* debuted in 2007, ecological stewardship has taken center stage in educational architecture—largely propelled by rating systems such as LEED and WELL. But with climate change accelerating, Ford's new book, co-authored with Kate Mraw and Betsy del Monte, pushes sustainability beyond doing less harm to restoring and revitalizing the environment. Forty-five culturally and contextually diverse case studies—from BCJ's Frick Environmental Center in Pittsburgh to Rajkumari Ratnavati Girls School in India by Diana Kellogg Architects—gather insights from educators, planners, and designers to chart a regenerative future for the classrooms shaping tomorrow's generation. *PX*

Climate-Driven Design I: Building Energy Use, Climate and Comfort, Passive Design Strategies, *by Christoph Reinhart. Building Technology Press, 256 pages, $38.*

Creating the
Regenerative School
Alan Ford, Kate Mraw, Betsy del Monte


Climate-Driven Design I
Building Energy Use
Climate and Comfort
Passive Design Strategies
Christoph Reinhart

The first volume in a planned series on sustainable strategies for new construction and retrofits, *Climate-Driven Design I* provides an examination of the conditions and factors affecting building energy use and occupant comfort. The book, by Christoph Reinhart, a professor of building technology at MIT, where he heads the Sustainable Design Lab, is smartly illustrated with diagrams and charts that, for instance, help clarify building-physics concepts, compare the performance of different exterior wall sections, or explain the workings of solar hot-water systems. Geared toward the technically oriented members of the building design and construction team, the book provides readers with the tools to lead the urgently needed transformation of building stock globally. *JG*

For other notable books, peruse our book reviews on architecturalrecord.com or in previous issues of the magazine.

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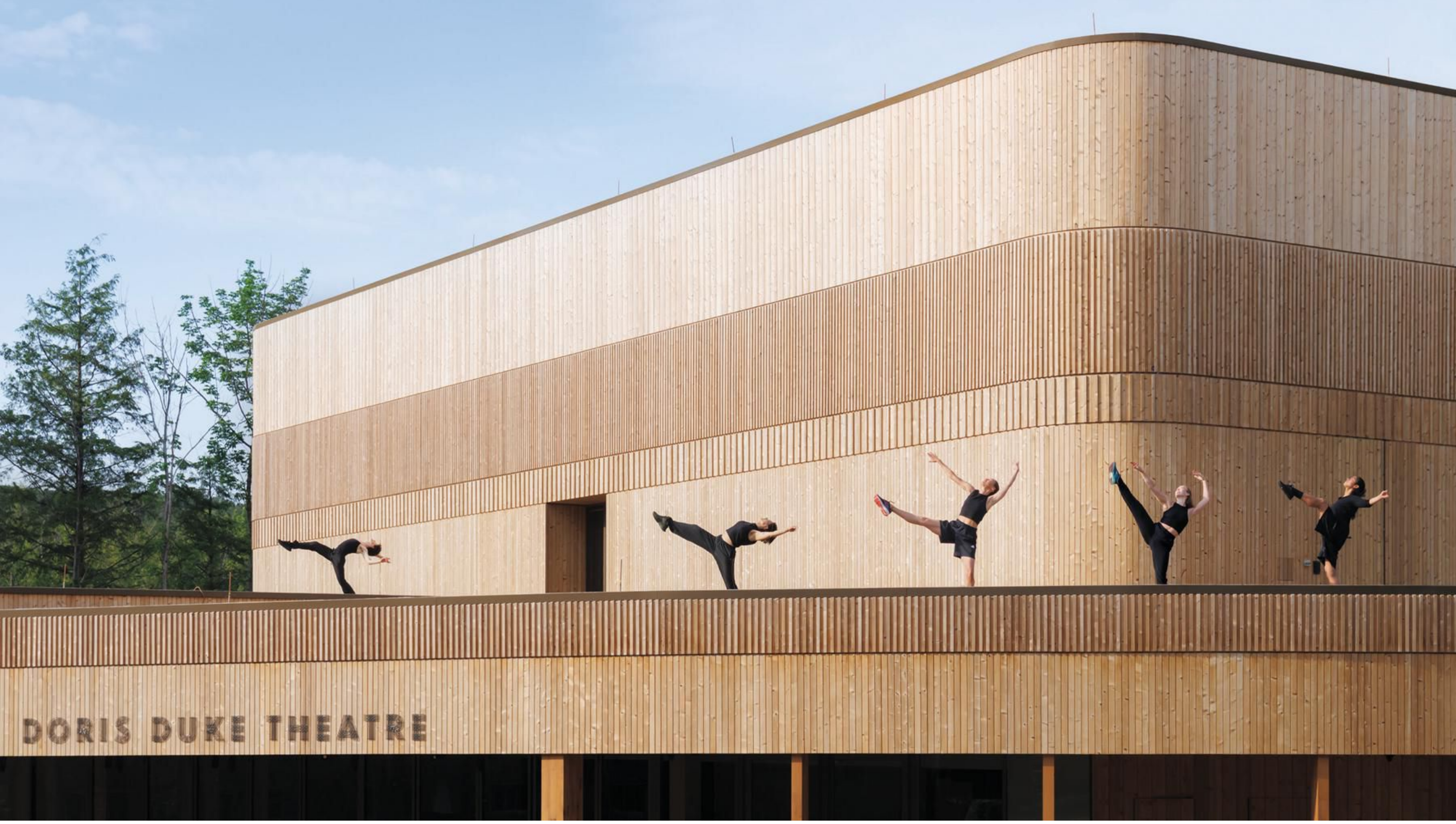
DORIS DUKE THEATRE | BECKET, MASSACHUSETTS | MECANOO

From the Ashes

A new dance venue has risen on the site of a theater fire at Jacob's Pillow in the Berkshires.

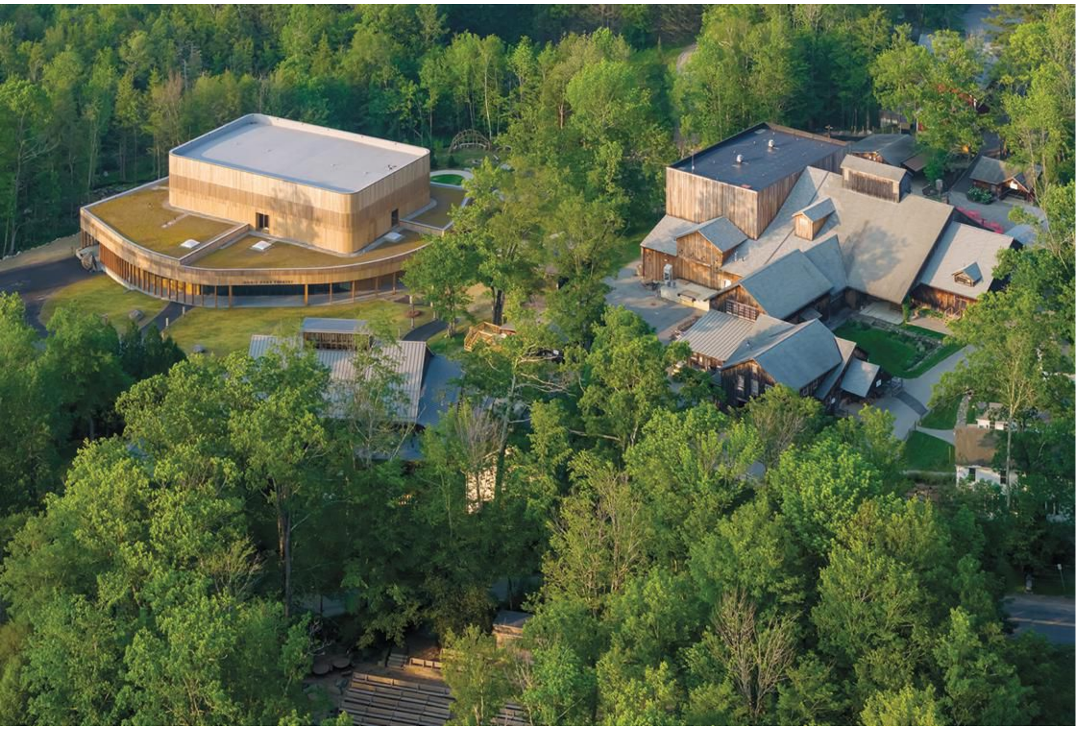
BY DANTE A. CIAMPAGLIA
PHOTOGRAPHY BY IWAN BAAN



THE BERKSHIRES campus of Jacob's Pillow, the dance center founded in 1933, is picture-postcard beautiful. Thirty-six buildings, many of them pitched-roof rustic-farmhouse-style performance spaces, are spread across 220 acres of bucolic Massachusetts woodlands. It's a near-total immersion in both dance and nature—a sanctuary or, at least, a respite from the always-on hurly-burly of contemporary life.

On November 17, 2020, that serenity was violently disrupted when a fire engulfed the Doris Duke Theatre, reducing to ash an 8,500-square-foot space built in 1990. It was a beloved piece of the Jacob's Pillow summer festival experience, a venue for major performances, and a focal point of community. But after a period of grieving, Pamela Tatge, executive and artistic director, began strategizing how to not only rebuild but to turn the tragedy into an opportunity to establish Jacob's Pillow as the future-forward leader in global dance.

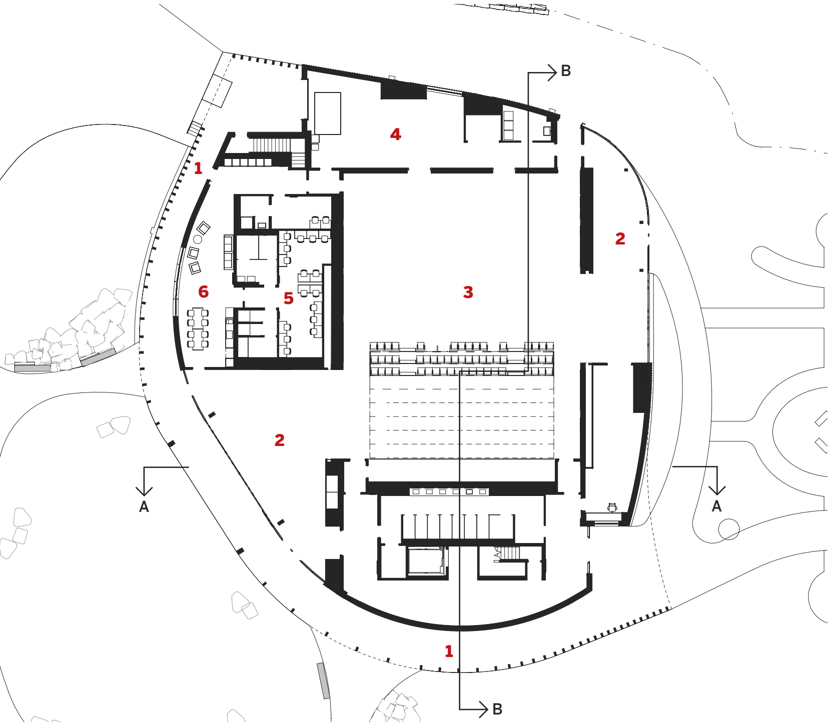
In 2021, Tatge tapped Dutch firm Mecanoo, which has a robust portfolio of theater designs, to lead the project of building a bigger, better Doris Duke. Mecanoo in turn partnered with New York–based Marvel as its architect of record and landscape designer. Two years later, ground was broken on a new 20,000-square-foot facility. And, last month, on July 9, this year's dance festival officially began with the opening of the new theater, the organization's most flexible, accessible venue to date, and one that upends the design tradition at Jacob's



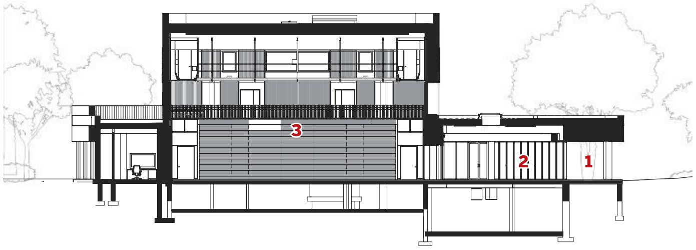
Pillow while retaining the spirit both of its context and the previous space.

Located on the site of the old theater, which is lower in elevation than the rest of the campus, it's easy to miss the Doris Duke among the older, angular silver-wood-clad theaters. But as one follows a path down and approaches from the east, the mass-timber building, jacketed in seven horizontal bands of wood, begins to reveal itself. The ground level is formed by a ribbonlike veranda that curves around the building, connecting the theater's two lobbies and wrapping a single-story plinth. It has an organic shape when seen from afar, helped along by the presence of a green roof. The auditorium—what Mecanoo founding partner and design lead Francine Houben calls "a magic wooden box"—rises above.

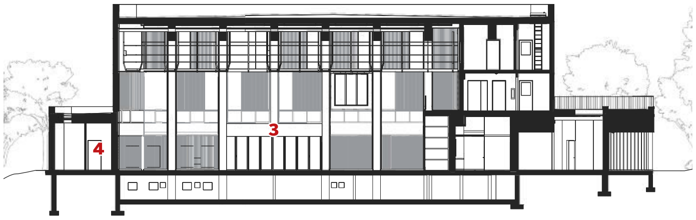
The scale of the structure is imposing, especially from the west, where the veranda is most present and faces a large meadow. Yet its sinuous profile helps make the building's presence manageable and less severe. It also creates a sense of movement—it's a "dancing



GROUND-FLOOR PLAN



SECTION A - A



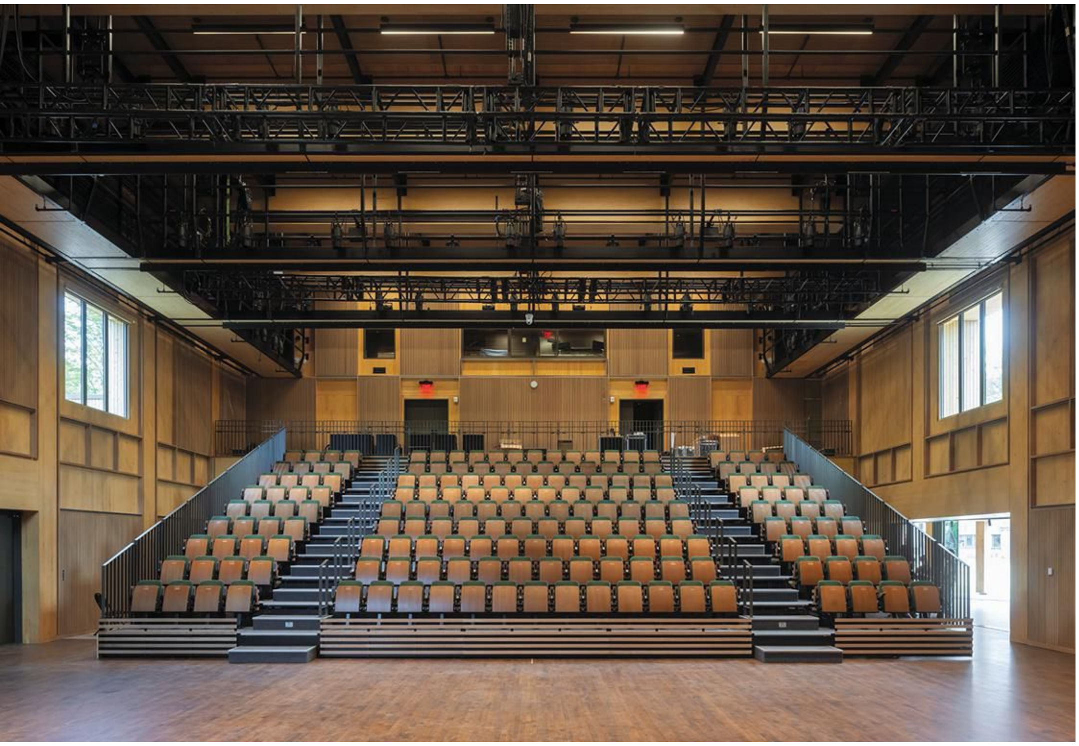
SECTION B - B

1 VERANDA
2 LOBBY
3 THEATER
4 GREEN ROOM
5 DRESSING ROOM
6 LOUNGE

A VERANDA encircles the theater (opposite and right) and leads guests to a lobby (above).

building," Houben says. "The veranda was very important," she adds. "That, for me, is the Berkshires. This theater is inspired by this climate. It really fits in the culture of being here." The architect says the decision to implement passive-design strategies came with practical benefits as well, such as treating the space as an all-season venue, unlike many of the other older, drafty structures on the campus that are only in operation during the summer festival.

Inside the building, walls of windows on the east and west visually connect the theater to nature and can be opened to create more expansive performances, replicating a beloved feature of the previous building. However, it was the introduction of the plinth and the decision to eschew the architectural style that characterized the campus that allowed Houben to not only realize multiple elements of the project brief but also address the shortcomings of its predecessor. "The old Duke was not really hospitable to artists and staff.



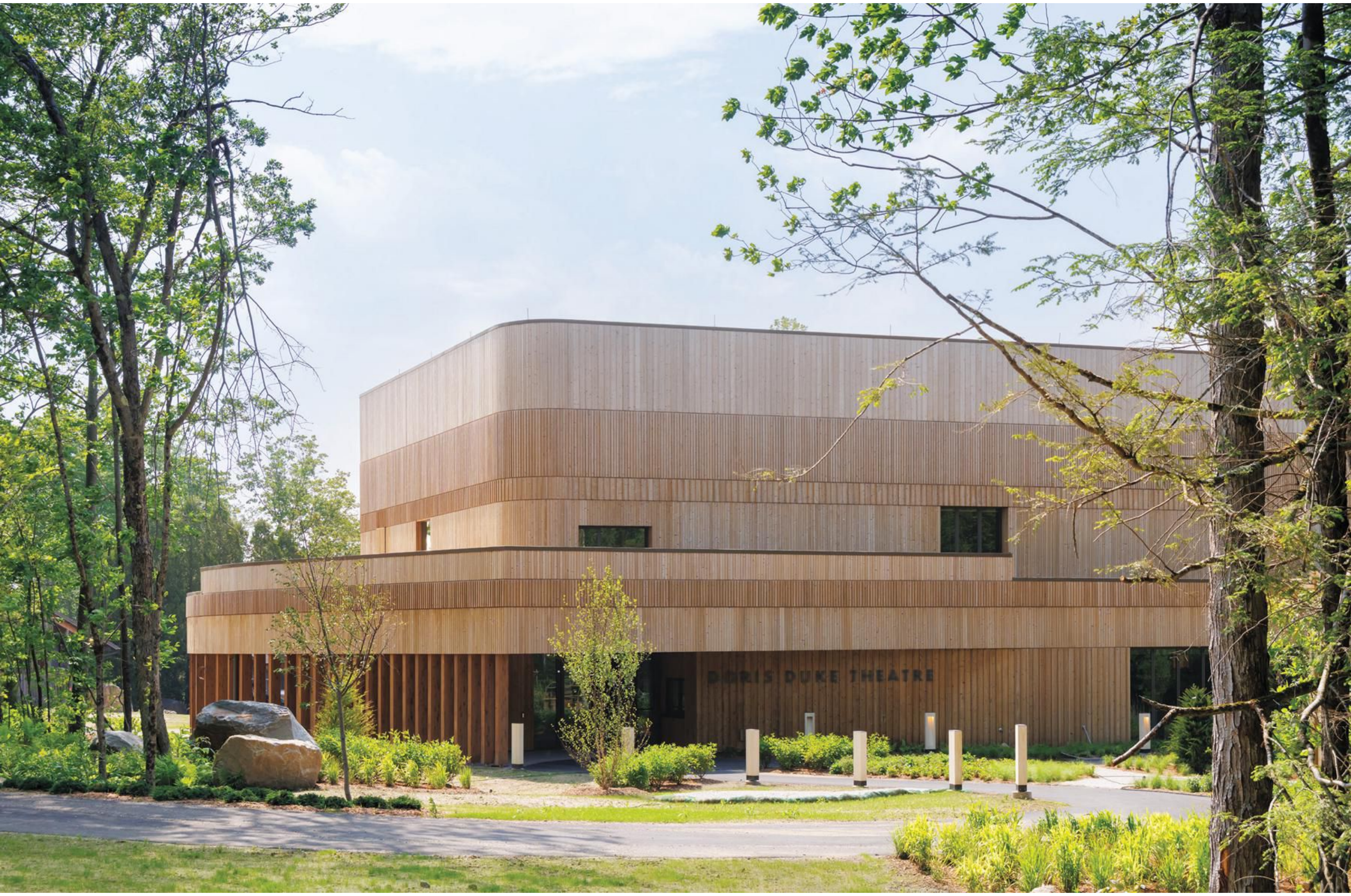
The spaces were really cramped," Tatge adds.

At the southern end of the building, a sequence of flexible spaces (lobbies, an art gallery) flows into expanded amenities to the north (including bigger dressing rooms, warm-up areas, and a large workshop), which not only improves performer experience but expands what they can accomplish at the theater. Now dancers can navigate around the auditorium and enter it from multiple points. Accessibility is increased throughout, and Pillow staff can better and more efficiently support increasingly sophisticated and digitally minded performance demands. "The opportunity was to not be in a situation where we would have to compromise the vision of an artist," Tatge says. "Now we have everything we need."

The auditorium, slightly larger than the previous space at 60 feet by 80 feet, is state-of-the-art, "incredibly wired," and "not married to a single type of technology," Tatge says, to ensure it can host as wide a range of events as possible, from analogue dance performances to those that involve robots and incorporate artificial intelligence. The box is defined by wood walls with acoustic paneling, rounded corners, retractable seating, and enough flexibility to accommodate a variety of configurations for up to 400 audience members. Perhaps the least expected design element, though, is one of the most subtle. Look up and you'll see a series of functional catwalks, camouflaged with timber-clad undersides. Aesthetically, it makes the space feel more intimate, while simultaneously vastly expanding what's possible in the kinds of events the theater can host. It's an experience that would not have been possible, Houben says, with a pitched-roof building.

"The domain of the catwalk feels very industrial once you get up there, but from below, by incorporating CLT underneath them, it really allowed for the preservation of the purity of the box," adds Marvel director Danielle Cerone. "We wanted this to be a very simple volume that also has the infrastructure in place for the Jacob's Pillow team to change this in a weekend and make it a new configuration."

The grounds to the west of the Duke are defined by the large Artist Quad, where visitors can gather and dancers can perform outdoors. The eastern approach is more ambitious and guided by Tatge's requirement for incorporating Indigenous values. Together with artist Jeffrey Gibson as the project's Indigenous consultant, Marvel mapped out a sequence leading into the main lobby.



Organized around a central grassy oval is a medicine garden planted with native flora and a communal fire pit, with seven stepping stones connecting each component. Even the seven horizontal bands of the facade are a symbolic nod to an Indigenous philosophy about building sustainably for seven generations.

"There was so much we learned about the meaning of common plants that helped make the garden an integral part of the entry experience. We really wanted to immerse people in it," says Marvel project manager Juan Guzman Palacios. Adds partner-in-charge Yadiel J. Rivera-Díaz: "I hope the ideas that emerge from this one part of the campus spread to the rest of it. I can't wait to see how it evolves over time."

Seen from above, the landscaping and pathways form the Mohican Many Trails symbol, signifying endurance and strength. It's a fitting marker for the site. Out of the ashes of the 2020 fire has risen a new, more resilient, and more innovative Doris Duke Theatre. Houben's "magic wooden box" is a space that "can have surprises, that performers can play with, and where the whole atmosphere, inside and outside, is unique," she says. "We wanted to create something that is forever and for everyone." ■

TIMBER CLADDING is organized into horizontal bands (above). The main theater space (opposite, top) includes windows that introduce daylight, exposed catwalks, and retractable seating (opposite, bottom).

Credits

ARCHITECT: Mecanoo

ARCHITECT OF RECORD: Marvel

ENGINEERS: TYLin (structural); Altieri (m/e/p/fp/IT/AV); Foresight Land Services (civil)

CONSULTANTS: Charcoalblue (theater/acoustics); Jeffrey Gibson, Heather Breugl (Indigenous); MW-Skins (envelope); Fisher Marantz Stone (lighting); Afreeman (signage)

ARTISTS: Misty Cook, Kathi Arnold (garden); Andre StrongBearHeart Gaines Jr. (firepit); Brenda Mallory (visual art)

GENERAL CONTRACTOR: Allegrone Companies

CLIENT: Jacob's Pillow Dance Festival

SIZE: 19,300 square feet

COST: $30 million

COMPLETION DATE: July 2025

Sources

MASS TIMBER: Nordic, Bensonwood

CLADDING: Kawneer (curtain wall); NanaWall (retractable wall); Delta Millworks, Lunawood (wood); Sure-Weld (TPO); WallGuard (wall panels)

GLAZING: Guardian

INTERIOR FINISHES: Jezet (theater seating); Forbo (resilient flooring); Robbins Dance Floor (floor system)

ALLIED MUSIC CENTRE | TORONTO | KPMB ARCHITECTS

Tight Squeeze

A storied concert hall's renovation and expansion maximizes a narrow site to add state-of-the-art facilities.

BY MATTHEW ALLEN

FITTING ANY BUILDING into an alleyway is a remarkable feat, and it's doubly bold to position a transformative institution for Toronto's booming entertainment industry within an interstitial space. But Canadian firm KPMB has done just that with its design for the seven-story Allied Music Centre, which provides vital back-of-house functions for the restored Massey Music Hall and offers some of the most sophisticated spaces in the city for audio production and performance.

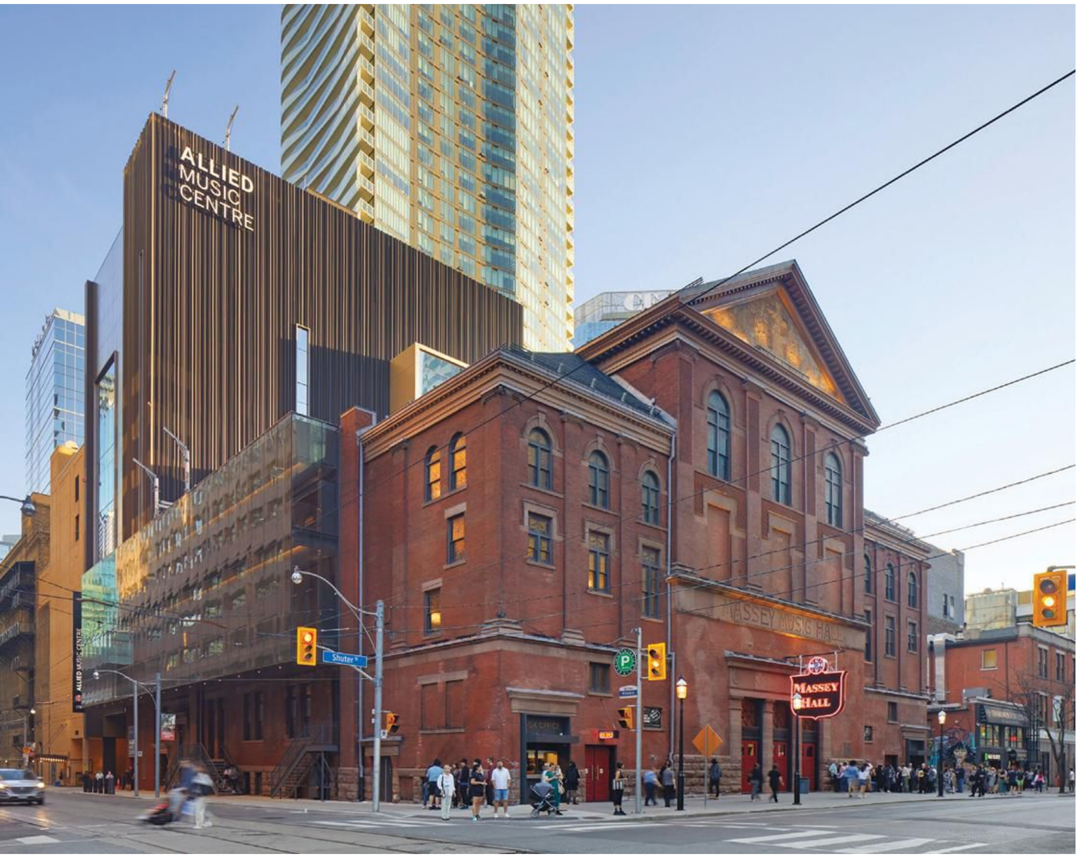
Clad in corrugated aluminum that mimics the rhythm of an undulating curtain, the building rises above a new loading dock placed along Massey's former, south-facing back door. Following preliminary sitework from 2012 to 2018, the restoration of the historic building and the addition both wrapped up in February 2024. Together, the two structures count some 124,000 square feet of performance space, along with the studios, lounges, and behind-the-scenes areas necessary to support an entertainment community.

Massey Music Hall opened its doors in 1894 within sight of City Hall; over the succeeding century-plus, artists from Neil Young to Harry Styles lauded its intimate acoustics, cementing its place as Toronto's most beloved music venue. Despite its storied past, charming traditional details, and distinctive sound quality, the hall had become easily outmatched in scale and visual effect by most stadium shows. It was booked only sporadically and no longer functioned as a creative hub.

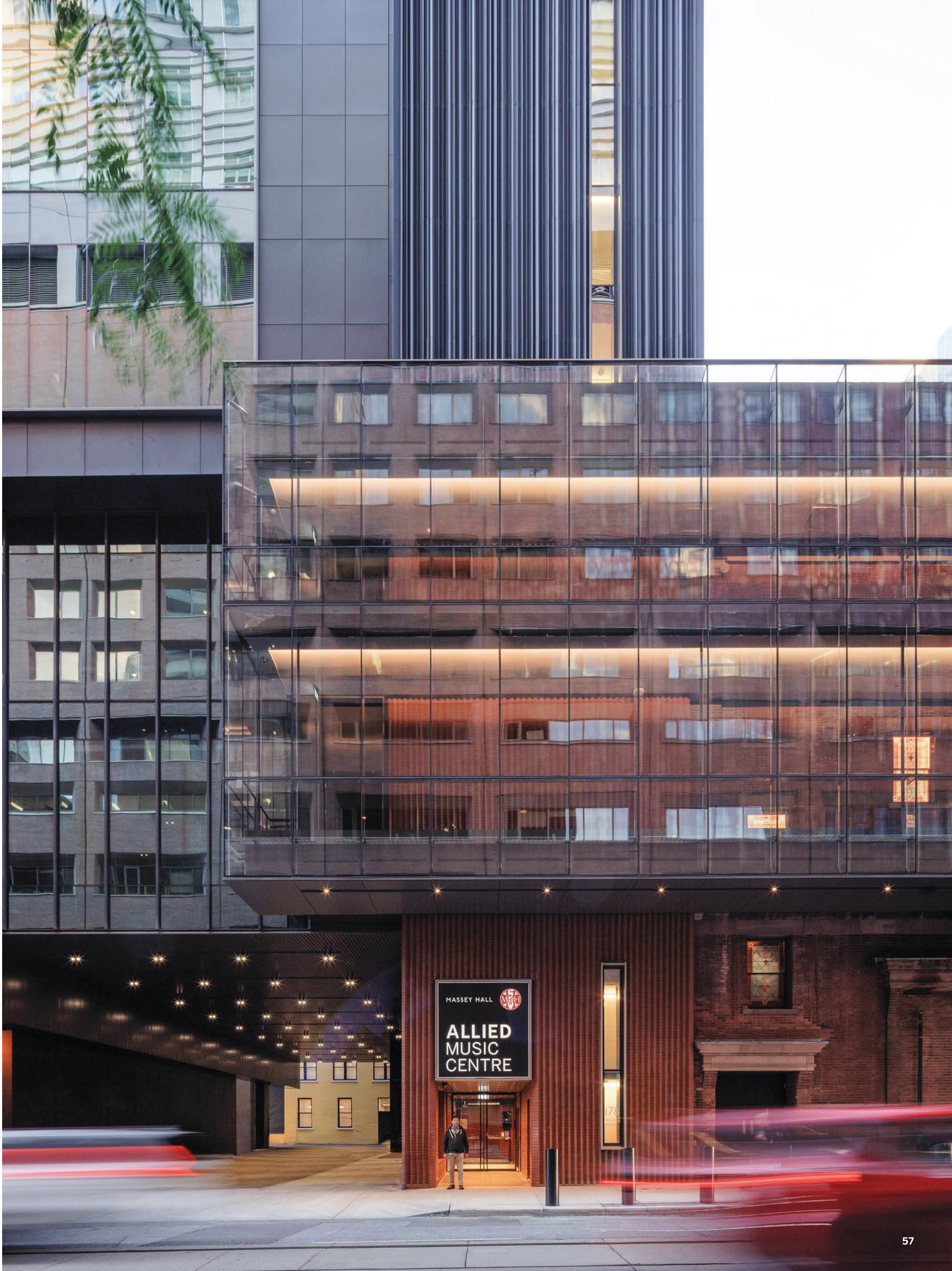
Carving out enough space for a community of artists was always the trouble for Massey. The lot was more than filled by the auditorium, a small lobby, and egress stairs that were crammed into the site's corners. The lack of even basic support spaces, such as a loading dock, left artists out in the cold: bands lugged their equipment in through the front door. At one point, a portal cut through a wall shared with a neighboring building opened space for musicians to hang out, but it never became more than a warren of dressing rooms and staff offices. "The symphony couldn't play at Massey, because there was nowhere to put their instruments," says Marianne McKenna, who cofounded KPMB in 1987.

Planning for the present-day project began in 2012, when the adjacent plot was gifted to the nonprofit that owns Massey as part of a development proposal for a 60-story tower, with a stipulation that an easement would be left for a driveway to connect through the site. KPMB drew up plans for the new building, and, the following year, the old backstage portion of the edifice was torn down and below-grade construction began. By 2018, the federal and provincial governments had offered $38 million each, and renovation and new construction began in earnest.

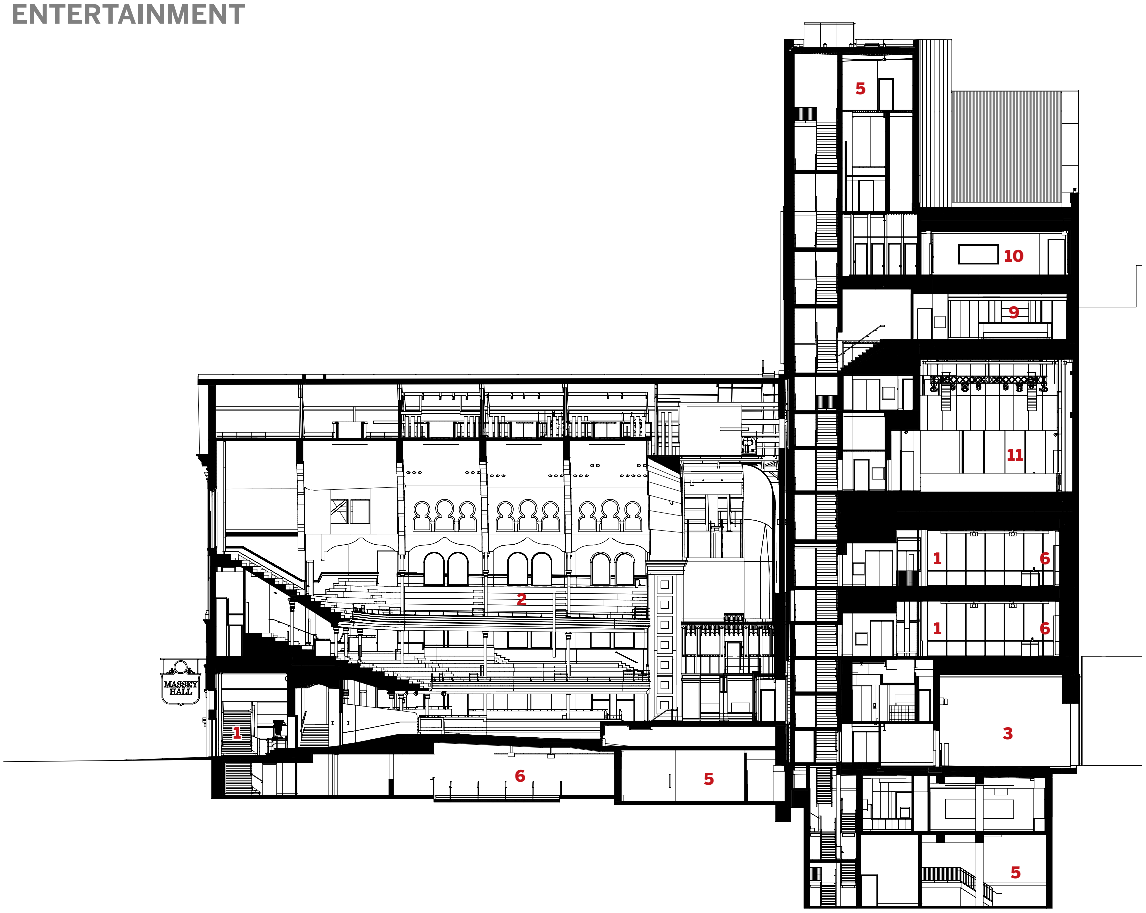
Although the envelope of the Allied Music Centre had been fully determined—by lot lines, the easement and vehicle access, and a height cap due to an air-ambulance flight path—the program remained nebulous for some time. "We initially designed the top two stories as spec office space, which became a problem when inches of insulation had to be



THE 130-year-old concert hall is located in downtown Toronto (left). KPMB's intervention rises above a former alleyway (opposite).


MASSEY HALL
ALLIED MUSIC CENTRE
178

PHOTOGRAPHY: © SALINA KASSAM; TOM ARBAN (OPPOSITE)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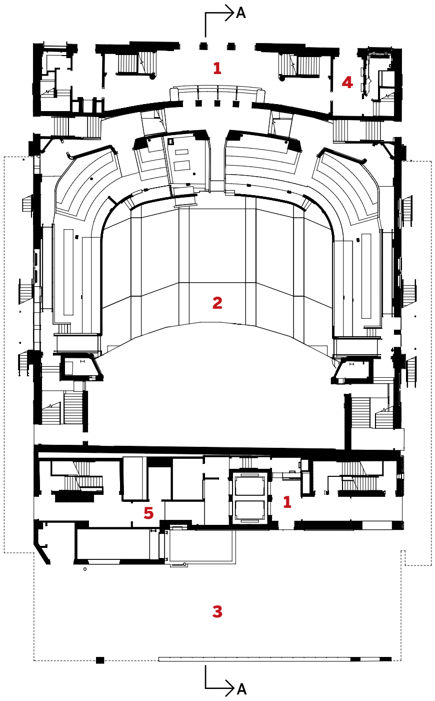
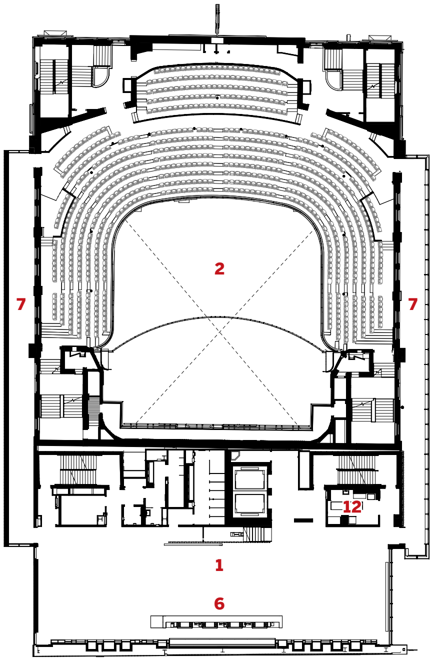
3 LOADING BAY
4 TICKET OFFICE
5 SERVICES
6 BAR
7 CATWALK
8 THEATER
9 LOUNGE
10 RECORDING STUDIO
11 CONCERT HALL
12 CATERING

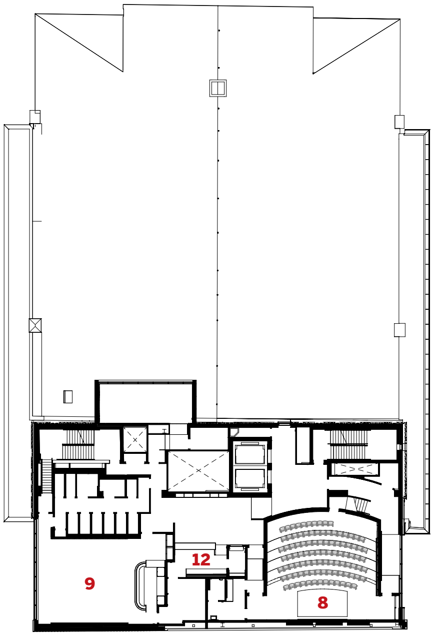
SECTION A - A



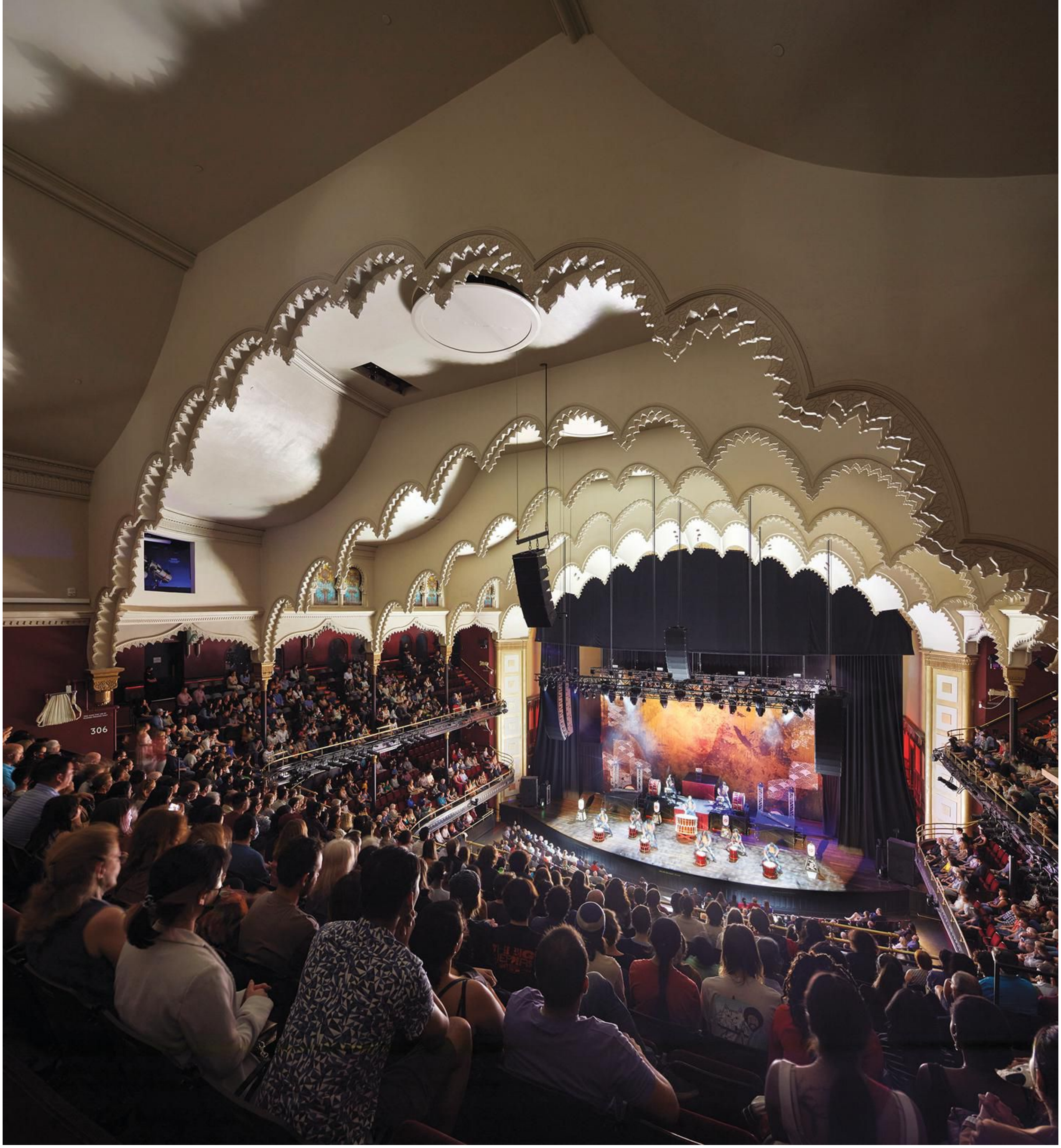
GROUND-FLOOR PLAN



LEVEL-TWO PLAN



LEVEL-SIX PLAN



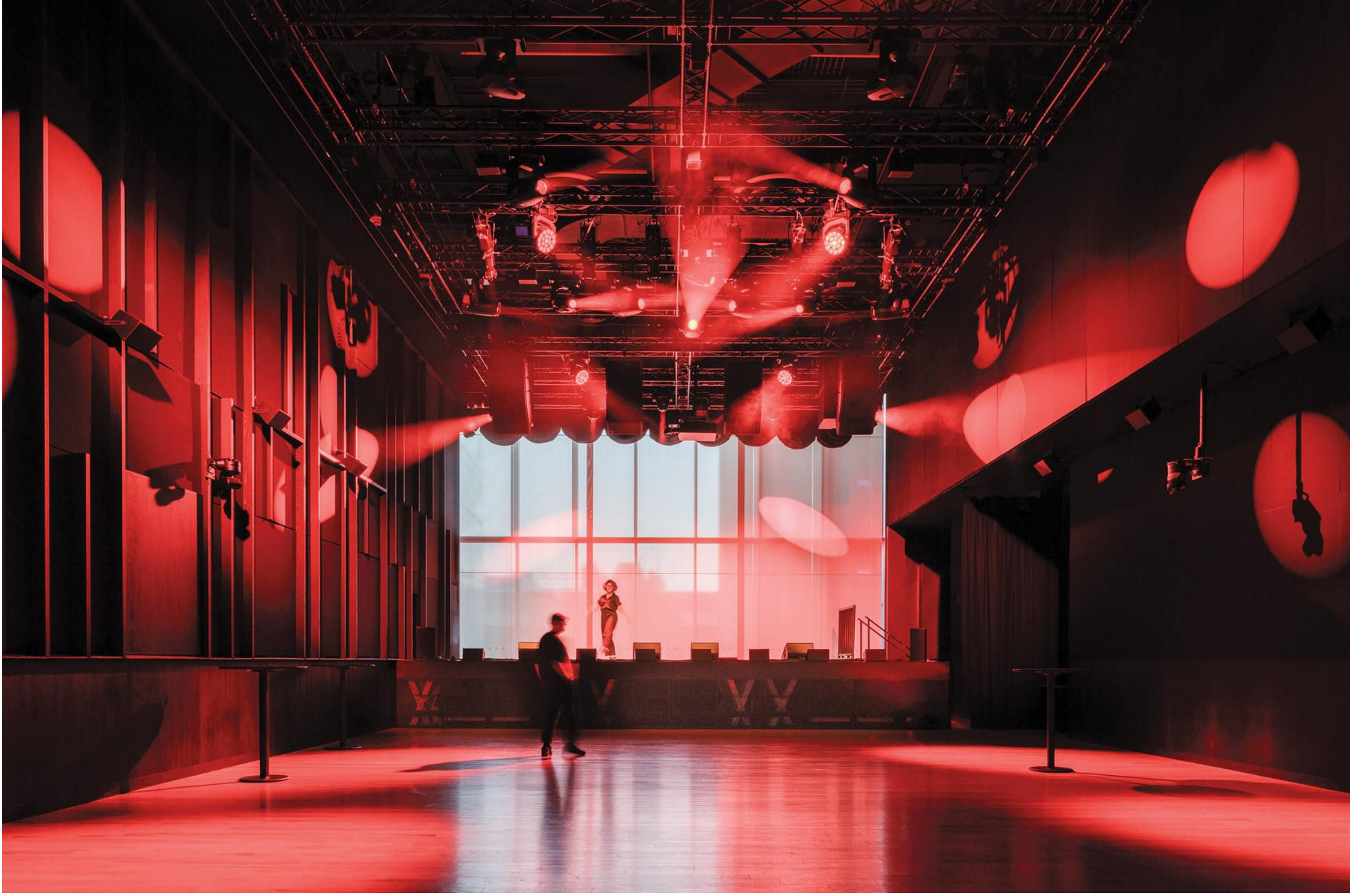
THE HISTORIC auditorium is renowned for its intimate acoustics and Moorish Revival architectural details.

PHOTOGRAPHY: © TOM ARBAN

added for acoustic isolation from the studios, theaters, and practice rooms," says Graham Baxter, principal at KPMB. The building's larger program finally clicked with funding from Allied, a real-estate investment trust that specializes in office-rental space. Allied's vision for the music center falls somewhere between philanthropy and market speculation. Community-development initiatives like artist residencies and specialized high school programs, which are supported by nonprofits and government grants, fit within the schedule alongside touring rock musicians.

At 67 feet deep, the newly built addition spans the alleyway and fills an area suitable for the back-of-house needs of the historic 2,550-seat auditorium at the heart of the institution. Within, besides a large performance space—its ceiling a technician's paradise of AV gadgetry—the new building houses a studio for immersive audio production and a small, flexible auditorium. To isolate each from the others, these three spaces are staggered rather than stacked, with a buffer of lounges and dressing rooms in between. Snaking hidden passageways allow multiple artists to enter dramatically on their respective stages throughout the building at the same time. All these new spaces complement the formula for the historic auditorium: big room plus big artist plus cheap tickets equals packed crowds. KPMB kept this intact, and concertgoers can still look in through red double-doors from the sidewalk, down the central aisle, and find themselves staring Sting in

Corporate Marquee Club Members



ADDITIONAL **performance spaces are located within the expansion (above). Bars and circulatory routes support the visitor experience (opposite, top and opposite, left). A state-of-the-art recording studio is found at the top of the building (opposite, right).**

the face as he tunes his guitar.

Renovations had to confront the history hanging everywhere in the air. “There was an exit sign with a dent where Robert Plant hit his head,” muses Baxter. “Plaster on the ceiling was being held in place by steel netting—maybe adding something to the acoustics. There was no ideal state to return to.” *Improve everything, change nothing* became the motto for the project, and so KPMB modernized the auditorium invisibly—for instance, installing new seating on the lower level that looks like the old but is entirely demountable, so it can be retracted under the stage.

To passersby, the most prominent features of Allied Music Centre are its curtainlike facade and a glass catwalk providing an accessible route to the upper level of Massey Hall’s auditorium. McKenna emphasizes that the latter is “an incredible intrusion into the public realm” that required negotiation with municipal planners. It provides a practical amenity by acting as a canopy to protect lined-up customers from the rain, but its more important consequence is symbolic. Part of the old building is now behind the glass of the catwalk and therefore like an object in an elevated museum vitrine. At night, when the building is lit, the concert crowd is milling in too, also along the sandstone Ionic capitals and reset stained-glass windows (protected behind panes that make them safe from any roughhousing).

These efforts reconnect the hall to the city and position the music center as a lively addition to the local entertainment ecosystem—one meant to be used, and used vigorously. Torontonians, once concerts are playing there, will have their hearts set aflutter when they can see the crowds and look to what each night’s program will reveal. ■

Matthew Allen is a theorist and historian based in Toronto and a professor at Washington University in St. Louis.

PHOTOGRAPHY: © SALINA KASSAM

Credits

ARCHITECT: KPMB Architects — Marianne McKenna, partner in charge; Chris Couse, founding principal; Graham Baxter, Matthew Wilson, Carolyn Lee, senior associates

ENGINEERS: Entuitive (structural, envelope); The Mitchell Partnership (mechanical); Crossey Engineering (electrical); WSP (civil)

CONSULTANTS: GBCA Architects (heritage); Charcoalblue (theater); Sound Space Vision (acoustics)

GENERAL CONTRACTORS: EllisDon, Tucker HiRise

CLIENT: The Corporation of Massey Hall and Roy Thomson Hall

SIZE: 124,000 square feet

COST: withheld

COMPLETION DATE: February 2024

Sources

MASONRY: Atwill-Morin (restoration); Clifford Masonry

METAL PANELS: Flynn

GLAZING: Applewood Glass; Inkan, Nupress (structural); EDG Glass Studio, Vitreous Glass (stained glass)

HARDWARE: Upper Canada Specialty Hardware

INTERIOR FINISHES: Wilsonart (plastic laminate)

L10 ARTS AND CULTURAL CENTER | BROOKLYN, NEW YORK | ANDREA STEELE ARCHITECTS

Layer Cake

A long-awaited hub for arts and culture is nestled in a downtown-Brooklyn-tower's podium.

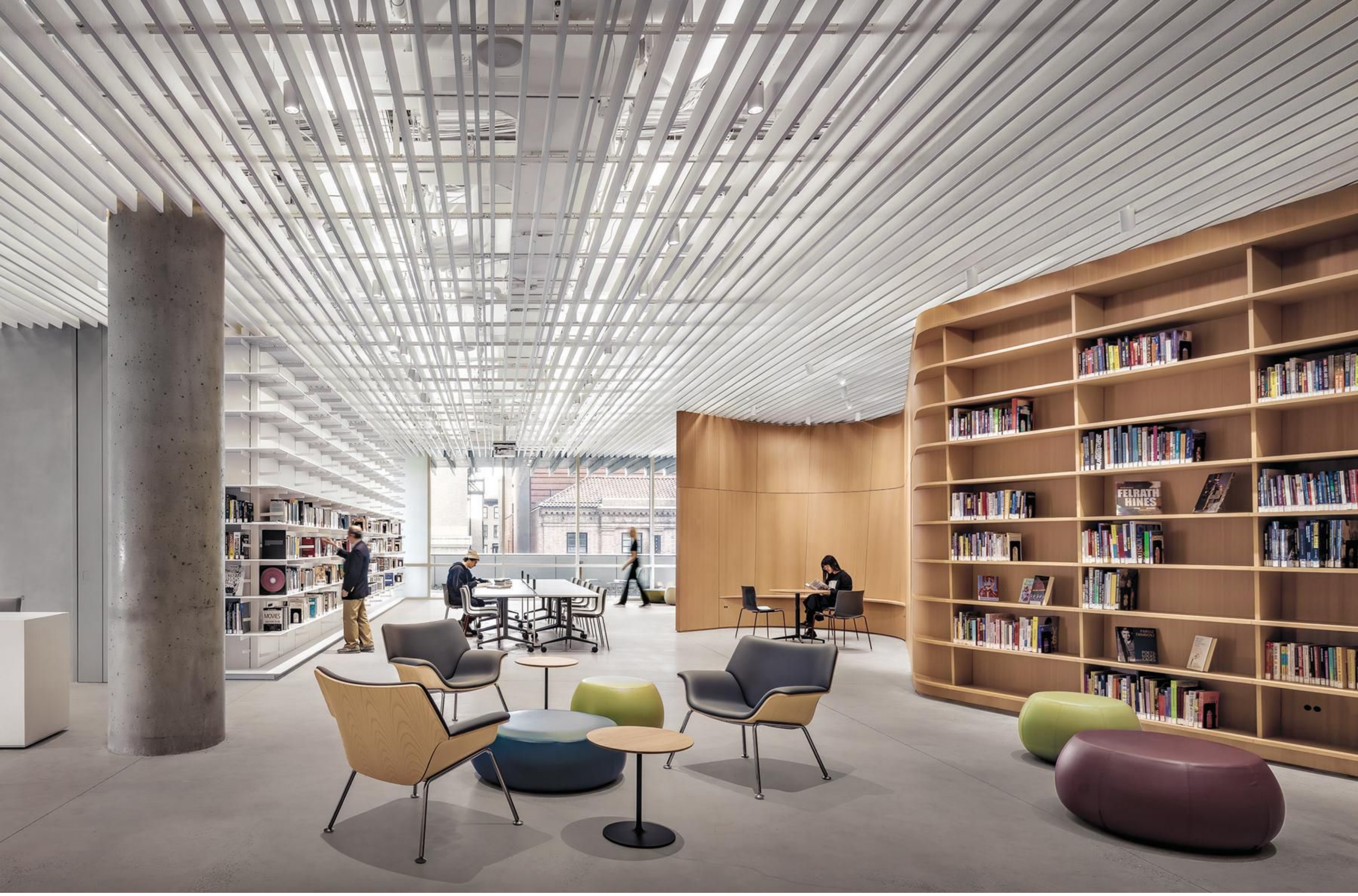
BY MATTHEW MARANI

DOWNTOWN BROOKLYN has experienced tremendous growth since its 2004 rezoning, having undergone some 32 million square feet of new development. The area is also home to a long-established cultural scene, anchored by numerous institutions, including the Brooklyn Academy of Music (BAM) and Museum of Contemporary African Diasporan Arts (MoCADA). But the introduction of new venues for creative expression has not kept pace with the many high-rises and residents that now populate the neighborhood. That is, before January, when the L10 Arts and Cultural Center (named after its address on 10 Lafayette Avenue), designed by Andrea Steele Architecture (ASA), opened its doors.

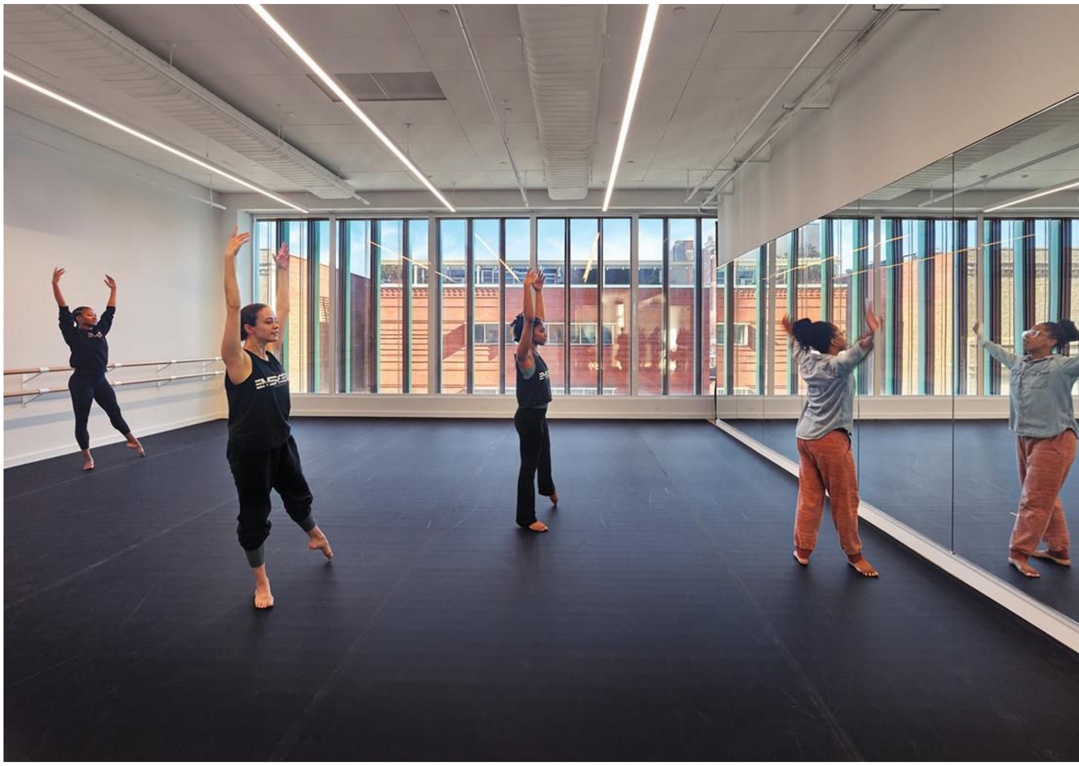
Within its relatively tight 65,000-square-foot confines, L10 incorporates a branch of the Brooklyn Public Library (BPL); an expansion of BAM's cinema and live-performance programming; and new homes for MoCADA and 651 Arts, an organization devoted to the contemporary performing arts of the African diaspora, replete with dance studios and a performance hall.

The center is located within the second to fourth floors of 300 Ashland, a 32-story residential tower with a retail component, designed by TEN Arquitectos. That project broke ground in 2014 on a municipally owned parking lot, in a joint effort between developer Two Trees and the New York City Economic Development Corporation (NYCEDC). Their RFP called for the inclusion of a cultural center, operated by the New York City Department of Cultural Affairs (NYCDCLA) and occupied by nearby nonprofit organizations.

NYCEDC and Two Trees received a special zoning permit for the parcel from the City Planning Commission to accommodate an increased floor-to-area ratio, a 15,000-square-foot public plaza, and a podium with varied street-wall conditions and setbacks. Those moves increased the number of allowable residential units and created more



THE GALLERY and library feature a baffle ceiling, with AV, lighting, and other elements tucked above (opposite and above). Dance studios have outward views (right).



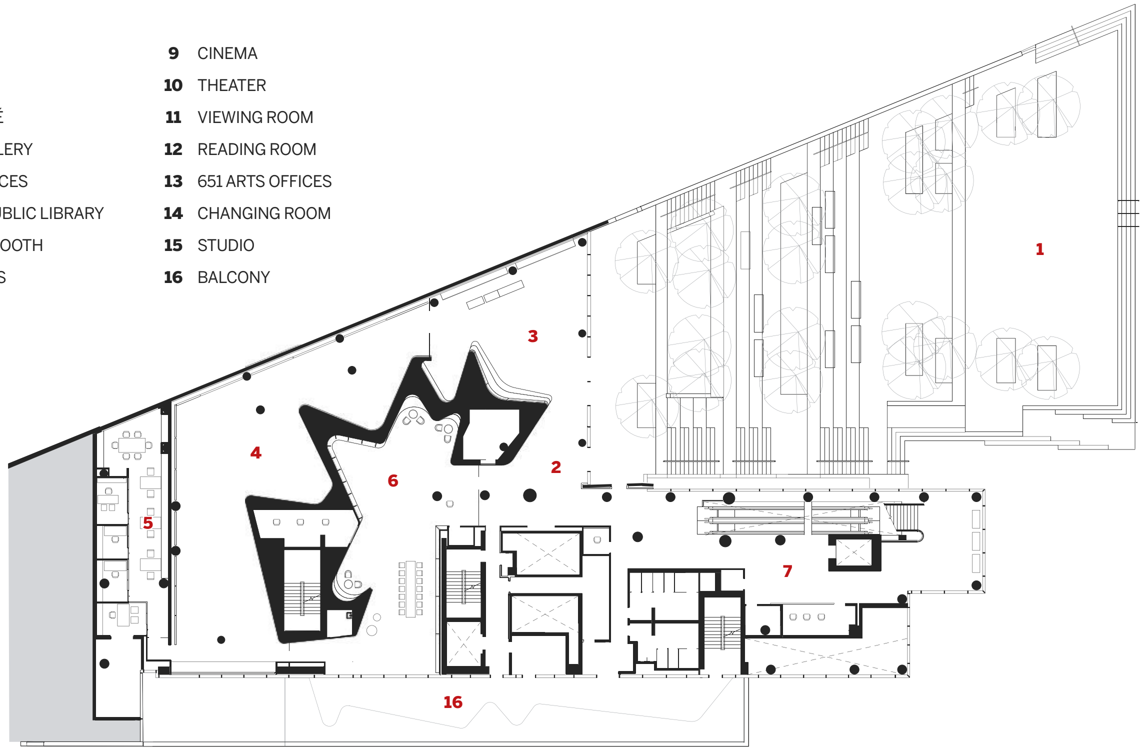
PHOTOGRAPHY: © ALAN KARCHMER/OTTO, EXCEPT AS NOTED; ALEXANDER SEVERIN (TOP)

space for the nascent arts-and-cultural center—or, in the lexicon of developers, it helped the project pencil out.

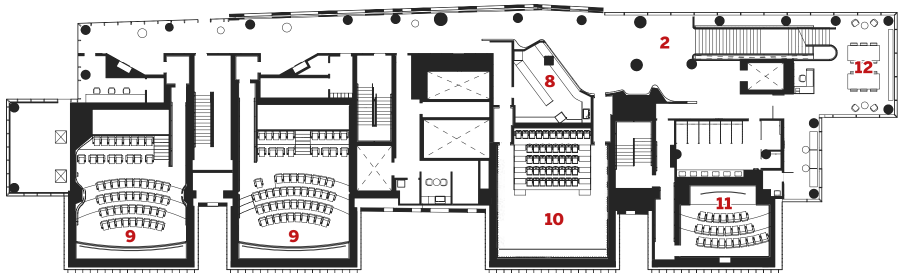
NYCEDC and NYCDCLA launched L10's request for proposals in 2015 and awarded TEN Arquitectos' New York studio the project; the firm's selection was dependent on approval by the future tenants. The office, led by Andrea Steele, became its own practice in 2019. The fit-out of the cultural center, a shell within the tower, began that same year, though pandemic-related delays, bureaucratic hurdles, and the unique arrangement between NYCEDC and Two Trees led to its drawn-out construction schedule (it was originally scheduled to open in winter 2020).

The project scope included the reinforcement and infill of the existing concrete floor plates, to accommodate the final design and program requirements and the installation of escalators and steel stairs with precast-concrete treads.

1	PLAZA	**9**	CINEMA
2	LOBBY	**10**	THEATER
3	MOCADA CAFÉ	**11**	VIEWING ROOM
4	MOCADA GALLERY	**12**	READING ROOM
5	MOCADA OFFICES	**13**	651 ARTS OFFICES
6	BROOKLYN PUBLIC LIBRARY	**14**	CHANGING ROOM
7	BAM TICKET BOOTH	**15**	STUDIO
8	CONCESSIONS	**16**	BALCONY



SECOND-FLOOR PLAN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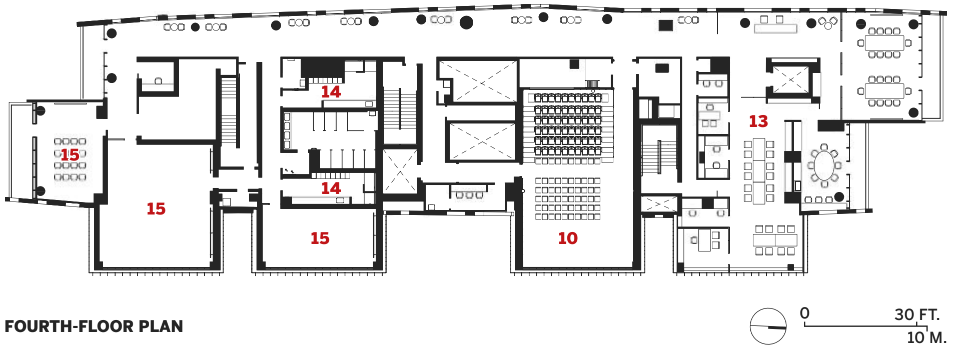
THIRD-FLOOR PLAN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FOURTH-FLOOR PLAN

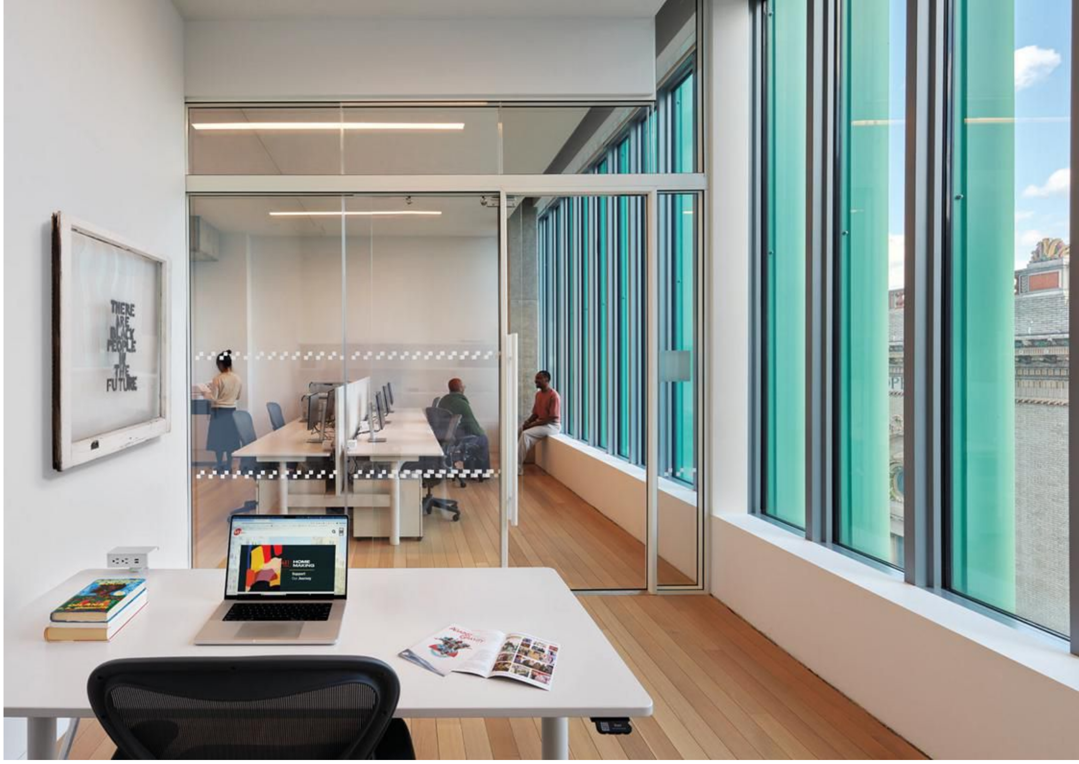
L10 is located within 300 Ashland (opposite). Cantilevered bays support the building programs (right, and below, right). A Leo Villareal installation dangles from the ceiling (bottom).

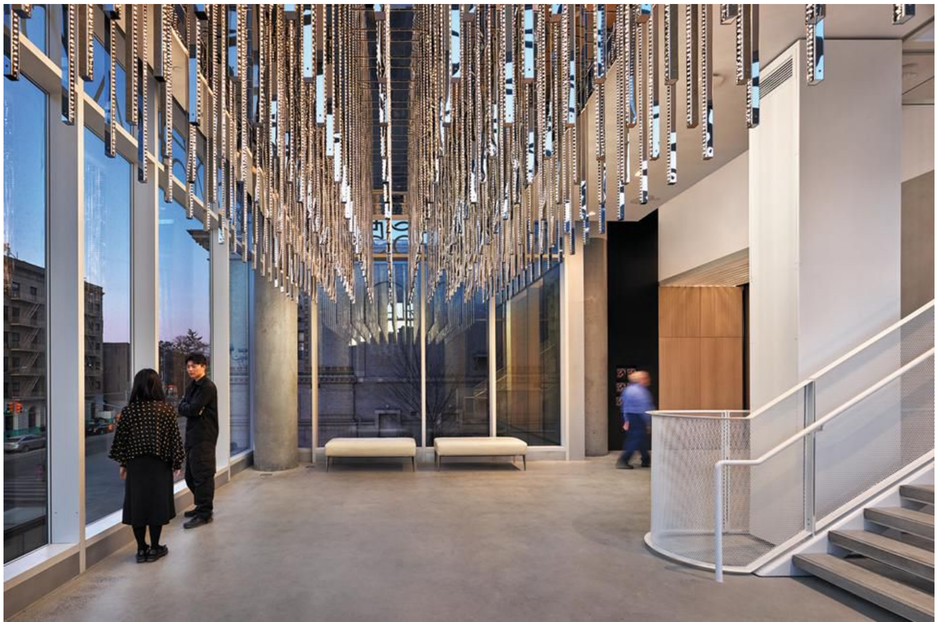
L10's main entrance is approached through the landscaped and stepped plaza located on the northwest corner of the site, and a storefront entryway, placed on the north elevation, provides access to an escalator and elevator that whisk visitors to the second floor. The bulk of that level is occupied by the Brooklyn library, with a collection devoted, for the first time, just to the arts, and MoCADA, which comprises a café, offices, and gallery space.

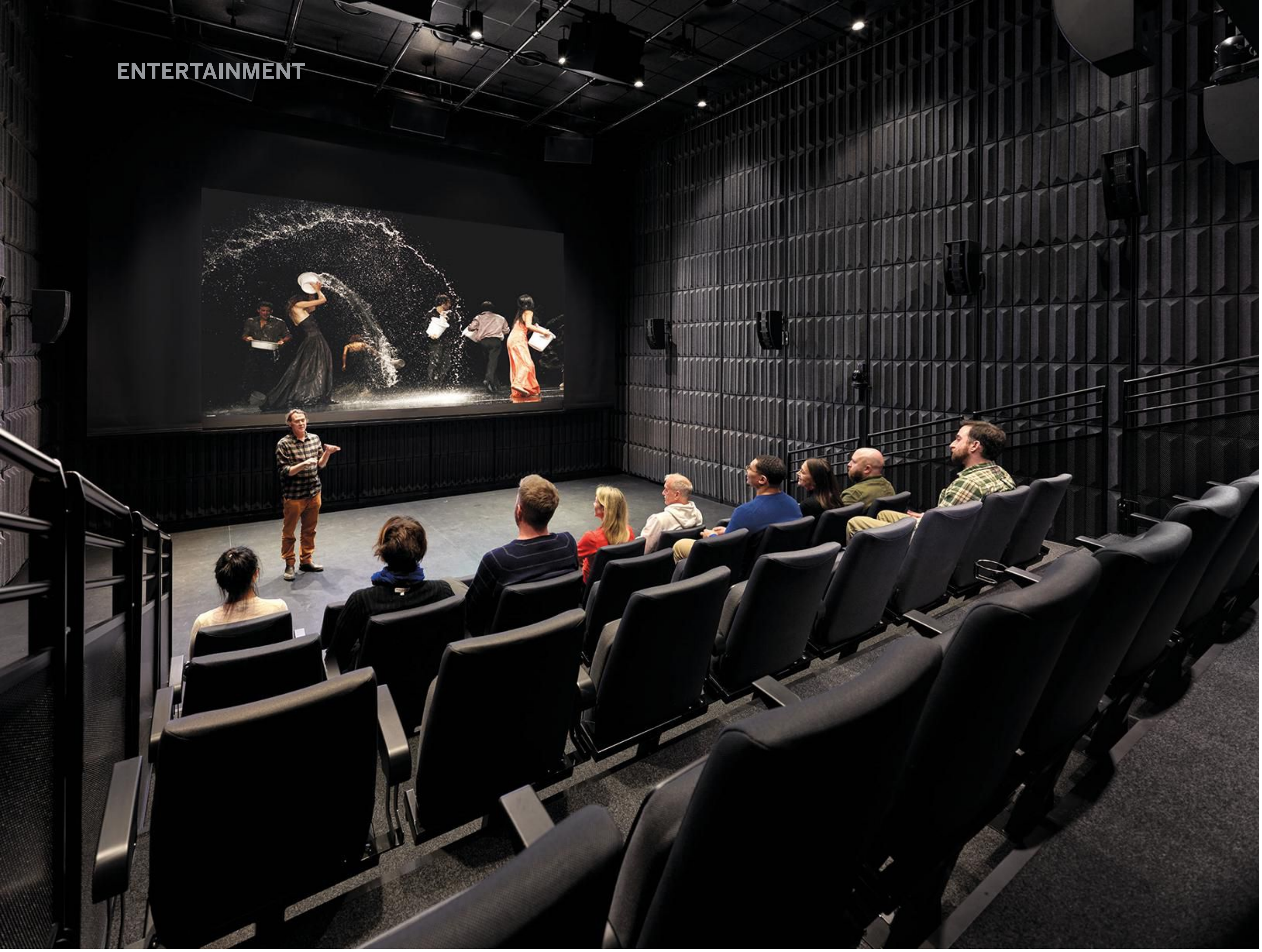
The original concept for the second floor called for a relatively formal demarcation of zones between the tenants, but, following extensive roundtables facilitated by the architect, a more harmonious plan came to fruition. "Initially, in an early space-allocation drawing, occupants and visitors would have arrived immediately in one of the tenant spaces, without a transition through a lobby, as each was keen to secure as much square footage as possible," explains Steele. "We held biweekly to monthly meetings, and, through those conversations, we were able to carve out neutral zones of joint habitation."

The design team, in collaboration with Brooklyn-based Situ Fabrication, inserted an undulating oak wall that threads the library and MoCADA programs together. In BPL's reading room, shelving and individual nooks are tucked into the wooden monolith's many folds while, for MoCADA, tiered seating permits the café to be used as a performance space on a dime. The curvilinear motif extends into MoCADA's galleries, albeit with drywall rather than millwork, nearly doubling the amount of exhibition-wall surface while providing more flexibility in terms of curation. Notably, the oak installation and the drywall also shroud elements, like structural columns and m/e/p infrastructure, and offer storage.

The north flank of the second floor is apportioned to BAM's ticket office, similarly detailed in oak paneling, and its cinema lobby, which is illuminated by *Volume*, a mirrored LED sculpture designed by Leo Villareal, whose earlier piece, *Stars* (2007), sparkles within the double-height arched windows of BAM's facade, located across the street. A grand stair and an escalator lead to the third floor, where moviegoers immediately encounter the concessions stand, which is flanked by curved millwork. That repeated motif is mirrored by a wavelike metal-mesh curtain shading a corridor leading to two cinemas, a







BAM'S branch within L10 includes a black-box theater, cinemas, and a viewing room, among spaces for other kinds of use.

black-box theater, and a small rentable viewing room. Each of the programmable areas is located within one of four oversized bays that cantilever off 300 Ashland's east elevation. A mezzanine level is tucked above the cinemas to make room for projection booths, a control room, and the institution's archival stacks.

Occupying the entirety of the fourth level is 651 Arts, with a more utilitarian palette of unadorned drywall and wood and vinyl flooring. Its office spaces are centered on the northern portion of the floor plate, while its dance studios and performance space are placed similarly to those for the other organizations, in the tower's cantilevered bays.

Stacking all these disparate programmatic elements and keeping them acoustically isolated required substantial detailing. The cinemas and performance spaces are heavily blanketed in acoustic padding, and they are isolated from one another through box-in-box construction. In the case of 651 Arts' studios and performance spaces, which have outward views of Downtown Brooklyn, the substantial window openings are fitted with double-layered acoustic glazing.

"We conducted a sound test toward the end of construction, and, of course, everyone was simultaneously anxious and excited to hear the results," says Steele. "So the operators of the cinema projection rooms blasted ear-piercing Michael Bay–like sounds, and 651 Arts hosted numerous performances, with dancers jumping around the studios. Thankfully, the library and the gallery below were dead silent, and the third and fourth floors were unable to hear one another."

The harmonious coexistence of these varied institutions could be a model for future such mixed-use developments, in Downtown Brooklyn and across New York. ■

Credits

ARCHITECT: Andrea Steele Architecture — Andrea Steele, principal in charge; Dichen Ding, project manager; Charles Mattern, technical director; Enrique Norten

ENGINEERS: RGCE (structural); Ettinger Engineering Associates (m/e/p)

CONSULTANTS: Fisher Dachs Associates (theater planning and design); Boyce Nemec Designs (AV); Lally Acoustical Consulting (acoustics); Situ Fabrication (millwork)

GENERAL CONTRACTOR: Skanska USA Building

CLIENT: NYCEDC and NYCDCLA

SIZE: 65,000 square feet

COST: withheld

COMPLETION DATE: January 2025

Sources

GLAZING: McGrory Glass

HARDWARE: Von Duprin (exit devices); Allegion Zero International (specialty)

ACOUSTICAL CEILINGS: Rockfon, Armstrong World Industries

PAINTS AND STAINS: Benjamin Moore

WALLCOVERINGS: Kirei

PLASTIC LAMINATE: Formica, Wilsonart

FLOORING: Madera (wood); Interface (carpet)

PLUMBING: ASI Accurate Partitions; Koala Kare (baby-changing station); Bradley (dispensers)

ENERGY MANAGEMENT: Delta Controls

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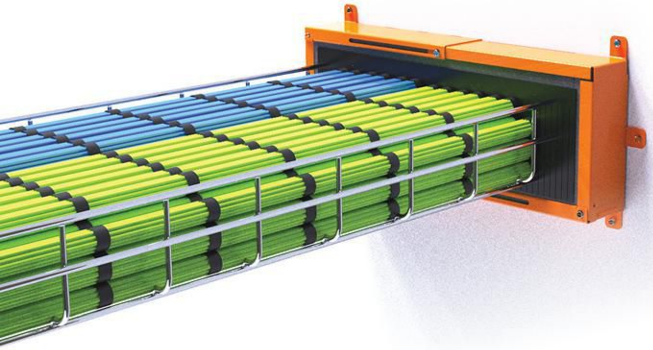

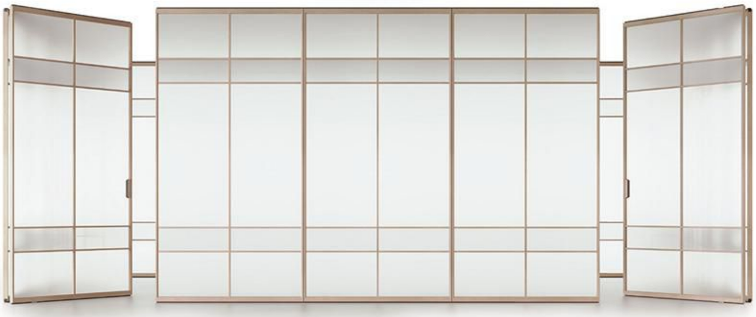

2025

Record Products

of the Year

The editors of *Architectural Record* are currently inviting submissions for the 2025 Products of the Year Awards, which salute the most-innovative building materials, components, and furnishings introduced to the North American market within the last year (no earlier than August 1, 2024).

A panel of architects, designers, and experts will select winning entries based on inventiveness, functionality, sustainability, and aesthetics. Winners will be published in the December issue.

DEADLINE EXTENDED:
FRIDAY, AUGUST 15

Enter online:
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Architectural Record's

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Joost Moolhuijzen
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Marion Weiss & Michael Manfredi
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CEU Sustainability in Practice

This special section covers wide-ranging strategies for a greener future, from circular and low-carbon materials and building adaptation to net zero energy and urban megadevelopments.

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Redwood City, California | SOM

78 **Highland Hall**
Portland, Oregon | Lever Architecture

82 **The Well**
Toronto | Hariri Pontarini Architects

86 **Hortus**
Allschwil, Switzerland | Herzog & de Meuron

CONTINUING EDUCATION

To earn one AIA learning unit (LU), including one hour of health, safety, and welfare (HSW) credit, read the "Sustainability in Practice" section on pages 70 to 90 and complete the quiz at architecturalrecord.com. Upon passing the test, you will receive a certificate of completion, and your credit will be automatically reported to the AIA. Additional information regarding credit-reporting and continuing-education requirements can be found at continuingeducation.bnpmedia.com.

Learning Objectives

1 Outline the necessary steps for designing a building to be operationally net zero.

2 Discuss some of the ways a large-scale urban development can be designed to promote social and environmental sustainability.

3 Describe how demolition waste can be used to make new construction materials, discussing the benefits and limitations of such materials.

4 Describe how mass timber can be combined with other low-carbon materials to make a floor system that can serve as an alternative to concrete slabs.

AIA/CES Course #K2508A

WASTE BRICK DEVELOPED FOR THE DESIGN MUSEUM GENT BY CARMODY GROARKE.

PHOTOGRAPHY: © ROMANIN & NOCETO

In conversation with Carmody Groarke

Although Kevin Carmody and Andy Groarke met during their time in David Chipperfield Architects' London office in the early 2000s, they are more likely to cite one of his clients, Antony Gormley, as a mentor. While the pair were working on the sculptor's new studio, he showed them how "materials take their form through processes and how these can determine the character of a project." They founded their own practice in 2006, continuing to collaborate with Gormley thereafter on a range of works. Two other early projects embedded the importance of material lifespan in their subsequent work: Studio East Dining was a striking temporary restaurant at the heart of the emerging Olympics Park in 2010, made from building-site materials such as scaffolding boards and poles, which were returned to their original use after three weeks. By contrast, their memorial to the July 7 terrorist attacks in Hyde Park in London was made from stainless-steel cast vertical pillars and was built to last for 300 years.

Carmody Groarke is known in London for its stylish, low-budget adaptations of existing buildings, which give, says Groarke, "an experience of architecture through the way that it is made." For example, the aluminum-clad extension of a simple warehouse in Bethnal Green, which mirrors the floors below, is a visual manifesto for reusing the city's industrial structures imaginatively. However, the firm's most interesting work has operated at the two extreme poles of lifespan established by its early projects. The Hill House Box is a temporary superstructure that protects Hill House, a key Charles Rennie Mackintosh work near Glasgow, that members of the public can access to closely view the historic building during restoration and renovation. The office has also been working on a long-term master plan for the British Library. RECORD *contributor Tim Abrahams speaks with Andy Groarke about the practice's thoughtful approach to the life of construction materials.*

Kevin Carmody (left) and Andy Groarke (right) founded their practice in 2006.

Tell me about the new building at Boston Spa for the British Library, which is expected to be completed next summer.

Around 80 percent of the library's collection is stored in Yorkshire, in buildings that were originally part of a WWII munitions plant. The last facility, built in the 1970s, used conventional architecture based on retrieving books off shelves by hand. The new building is a fully automated storage facility. In a single room the size of a soccer pitch and about 10 stories high, 8 million books will live.

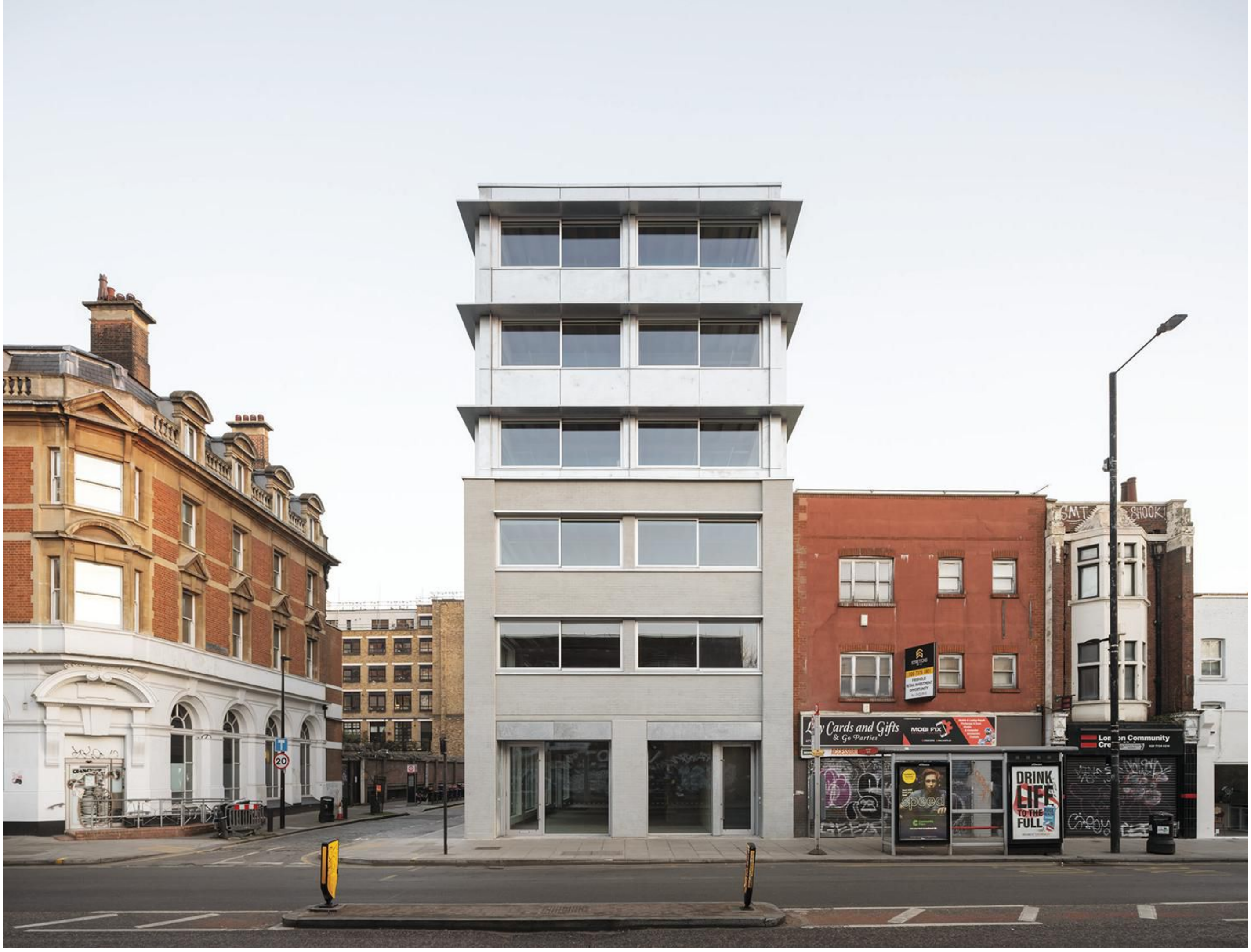
Where is the architecture in such a building?

We thought about trying to find ways in which the architecture could help not only environmental sustainability, but the long-term institutional sustainability of the British Library by creating an archive building that was as passive as possible.

We are nearing completion, and the tests are telling us it's one of the most airtight buildings in Europe, so we can neutralize risks to the collection by de-oxygenating the environment to the same air quality of Base Camp Two on Mount Everest—quite difficult to breathe in, but it almost eradicates the risk of fire. The environmental engineers have worked out that the collection itself can create thermal stability, meaning that the energy use of the building is only around 3 percent of the energy use of the last storage building the British Library built.

What is it like to be inside it?

You get this otherworldly space of robots and books at a



PHOTOGRAPHY: © BENJAMIN MCMAHON (OPPOSITE); JOHAN DEHLIN (TOP); COURTESY CARMODY GROARKE (BOTTOM)

scale that, at first sight, you can't get your head around. We find that a tremendously interesting spectacle.

What about the exterior?

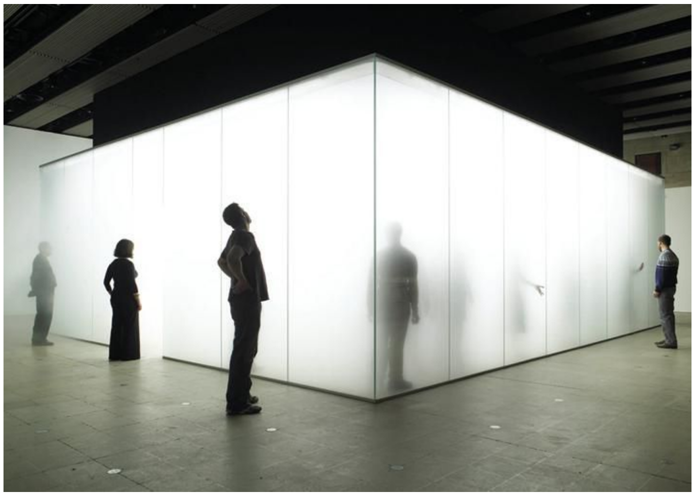
You're left with a very big shed on the landscape. And so we did a research project with our students at Yale to look at sheds that have abstracted themselves in terms of scale and by giving away nothing of their contents. These buildings have none of the grammar of conventional architecture, and we thought, how do we place them in the world? How do we give them form and figure?

What will be the public experience of it?

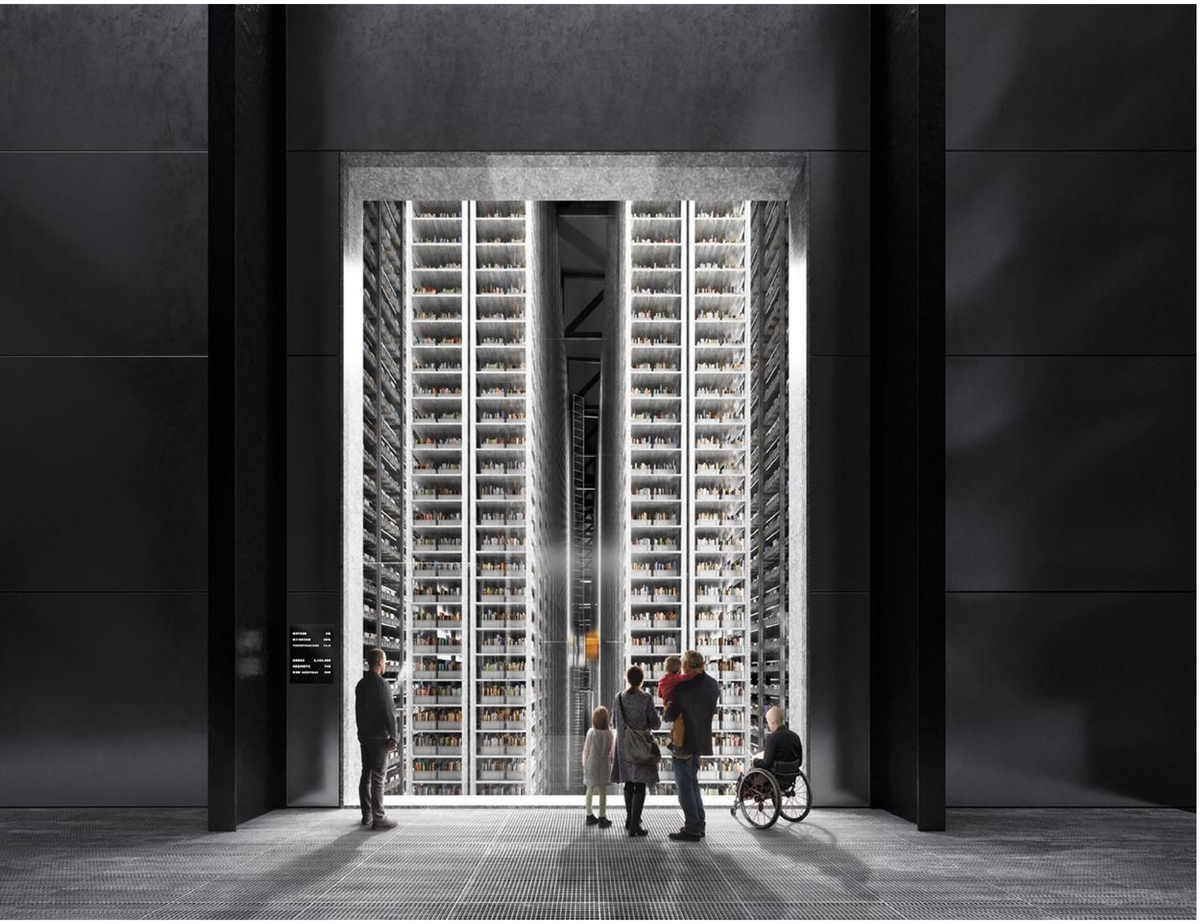
One bay of this huge shed is dedicated to the visitor experience. A super-airtight window gives you a view straight down into the workings of the British Library.

How does this relate to the project you are doing in Amiens?

Through developing the expertise with the British Library, we won a competition for the Bibliothèque Nationale de France to create an even larger conservation and collection storage. We are taking those environmental innovations one step further by putting the structure on the outside of the box. Referencing the flying buttresses of Amiens cathedral, we have created a



The extension of a former 1970s textile workshop on Bethnal Green Road in East London is a model of urban reuse (top). Carmody Groarke worked with Antony Gormley on his first major retrospective (above).

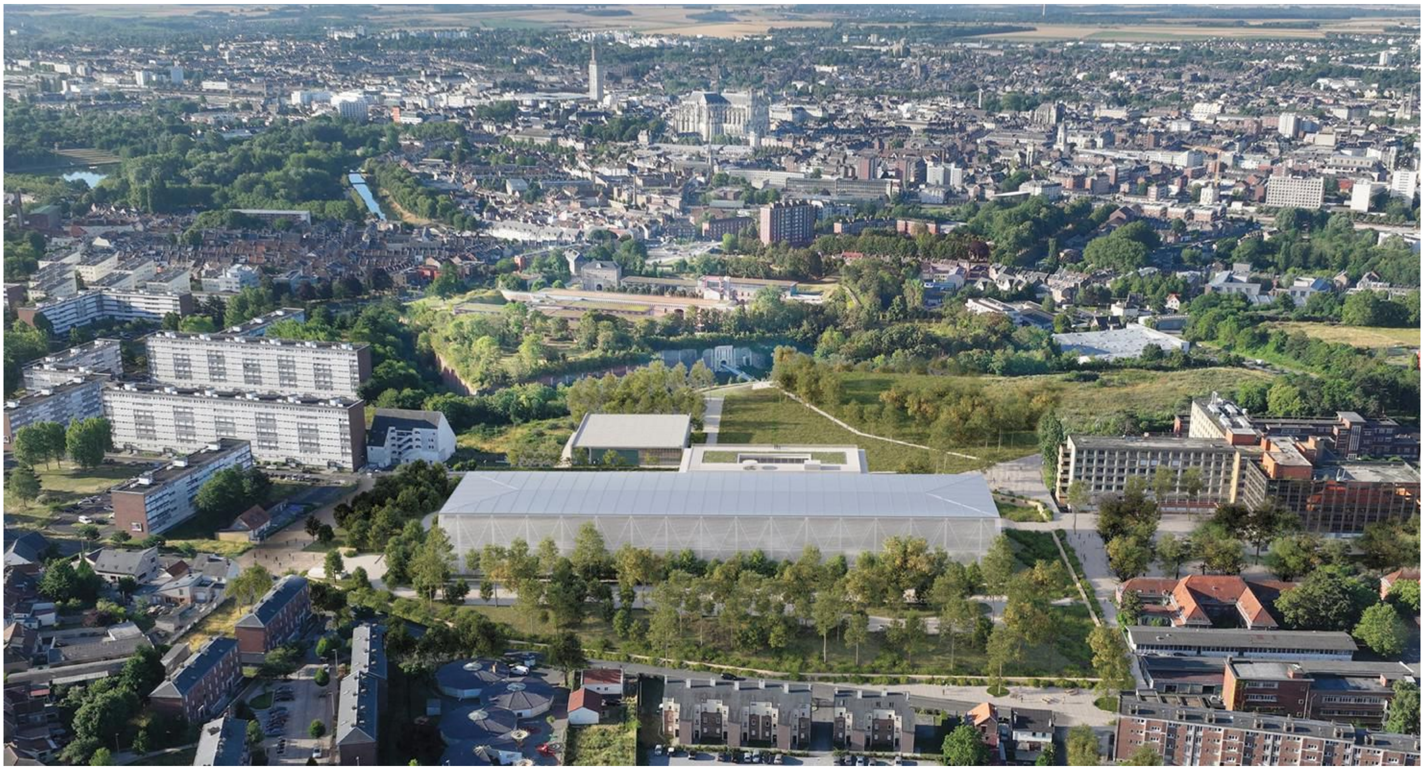


A viewing gallery will allow the public to experience the British Library's automated technology (left). Another archive, in France, puts the structure on the outside, mimicking the nearby Amiens cathedral (bottom).

totally different architectural identity. It also creates a completely smooth internal space that will improve airtightness.

The material process is significant to the Design Museum Gent. Can you tell us about it?

We won that project in a competition in 2019. We had an idea about how the form would fit the city. And we had an idea that, like Ghent's cathedral and town hall, the building should be white but, like other buildings in the city, brick. Then Covid hit. We started to rethink how we would physically make it and started to research brick technology, realizing how violent and consumptive it is as a building material. So the question became, "How can we create something that is made with a ver-



nacular process of laying brick on brick but reduce the impact through design?" We created a totally new brick from a cocktail of municipal waste.

Are you talking about building-material waste?

Concrete from demolished buildings, ceramics, toilets, car windshields—a very specific recipe which would give this brick its light, white character. We cured it and pressed it with lime, so it didn't need to be cooked. We can get to about 35 percent of the carbon of a regular brick.

These bricks are as strong as a regular clay-fired brick. They absorb a little more water in certain conditions. We reflected on this and changed the grammar of the building according to this new vernacular material. We've amplified the details: projecting copings and bigger eaves and window sills.

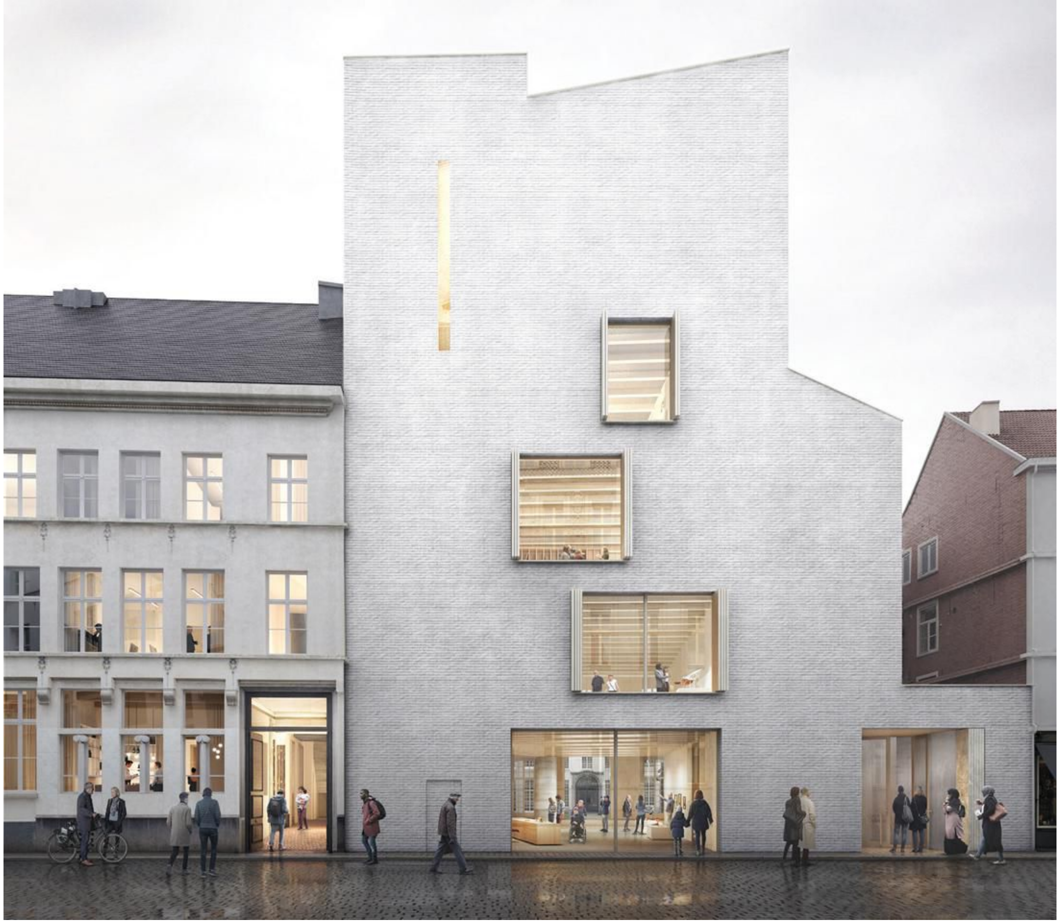
How did the client react when you went back to them with this innovation?

We're really fortunate that they've been supportive of this journey to innovate with this idea that the building is a representational one, and it's showing what public buildings can and should be. This is a publicly funded project, which means we can't just do anything we want. The brick was developed over two years of testing and approvals.

What will be the architectural effect of this rethought building material? How does that reflect your general attitude to the relationship between process and end product?

When we begin a project, we may have certain instincts about form and spaces and the materials that are going to make them. But, thereafter, the life of architecture in its realization and after its realization depends on many things beyond our control. And we've got to be very comfortable with that afterlife. ■

PHOTOGRAPHY: COURTESY CARMODY GROARKE; © JOHAN DEHLIN (BOTTOM)



Structured and finished in timber internally, a new building for the Design Museum Gent uses brick made from city waste for its facade (above). Hill House Box is unusual in allowing visits by members of the public during active conservation as one of Charles Rennie Mackintosh's most significant works is being restored (left).

500 COUNTY CENTER | REDWOOD CITY, CALIFORNIA | SKIDMORE, OWINGS & MERRILL

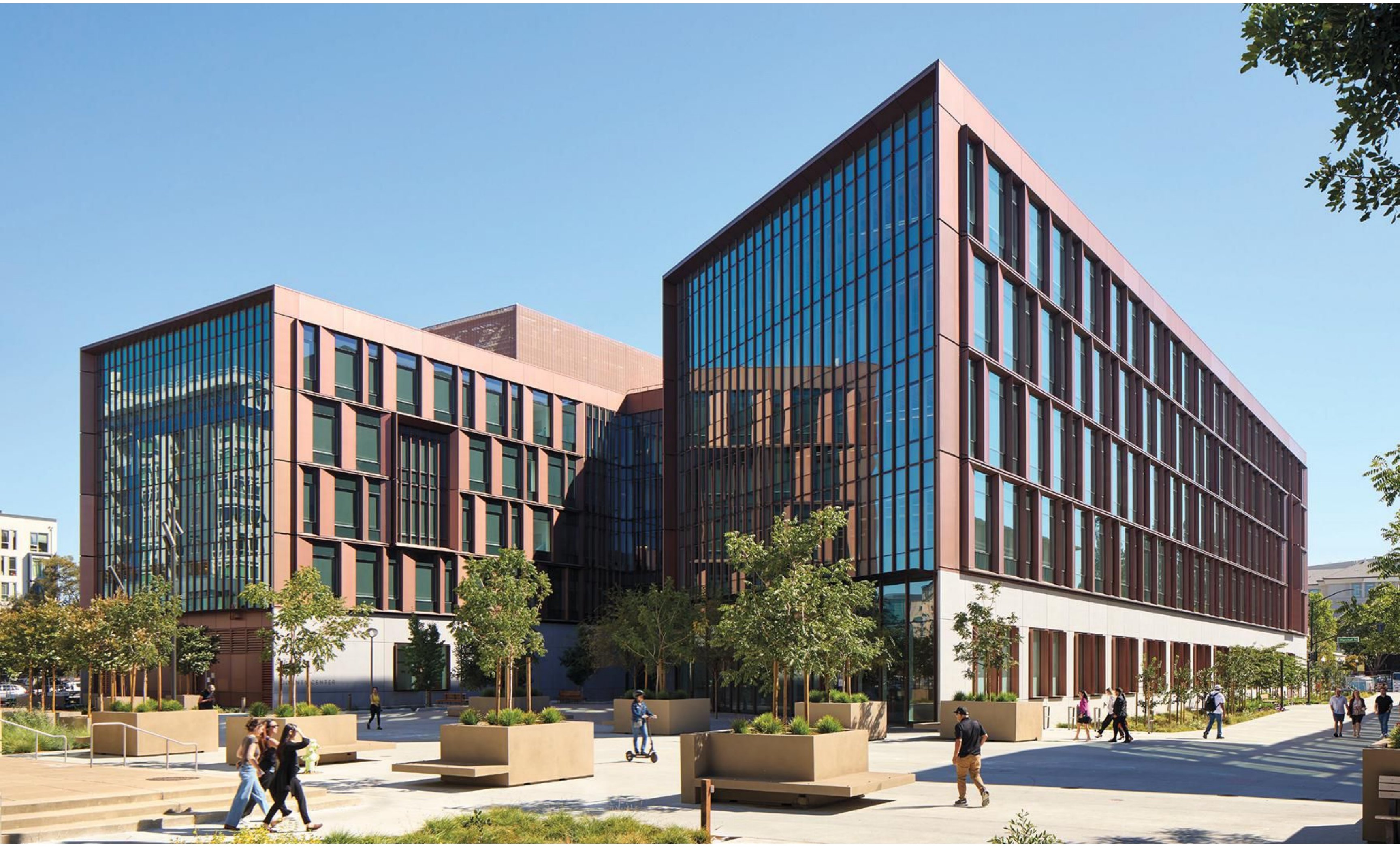
Out of the Woodwork

In a former logging town, SOM delivers a distinctive, highly energy-efficient mass-timber county building.

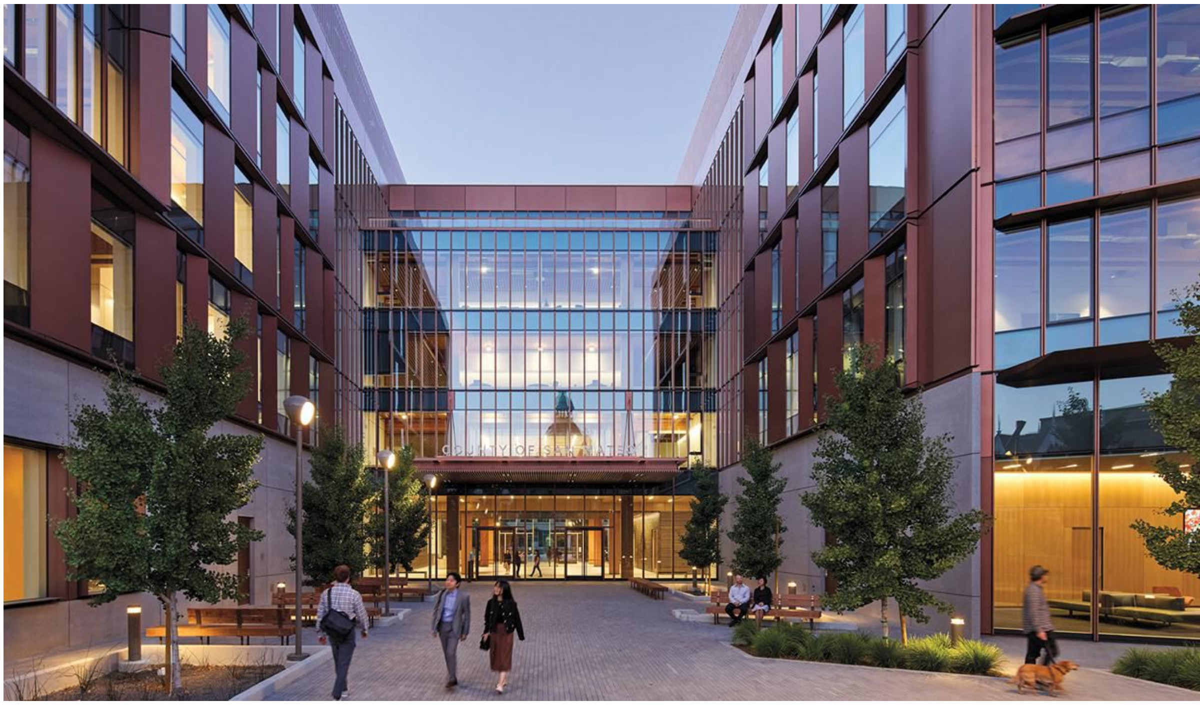
BY CLARE JACOBSON
PHOTOGRAPHY BY DAVE BURK

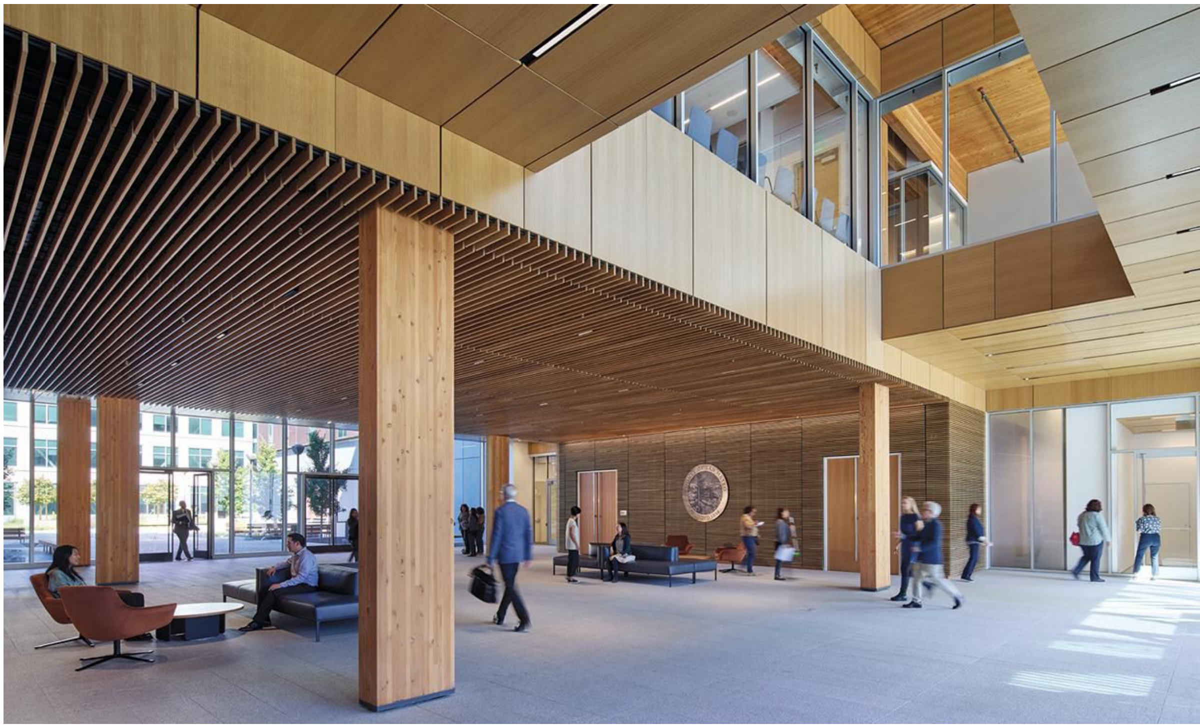
SAN MATEO County officials had a tripartite request for 500 County Center in Redwood City, a former timber town between San Francisco and San Jose. "They asked us if we could design an emblematic building, for a budget," says Javier Arizmendi, principal and lead designer at Skidmore, Owings & Merrill (SOM), "and a super-sustainable one." The ask involved collecting offices of several San Mateo departments—including county and district attorneys, the board of supervisors, human resources, and Budget, Policy and Performance Office—from nearby, unbeloved buildings into one new center. It resulted in a five-story, 207,000-square-foot design that meets these three requirements, and more.

The position of 500 County Center in Redwood City, and its facade, are meant to draw attention. Its site has civic structures and a parking garage to the north and a cultural and commercial district to the south. The building's H-shaped plan, with two corner cuts, stands out from this context and creates outdoor areas opening to these two directions. The fully glazed lobby at the center of the H reads both as a



The copper-toned, metal-clad building (opposite) has a glazed lobby at the center of its H-shaped plan (below, right), linking two plazas (right).



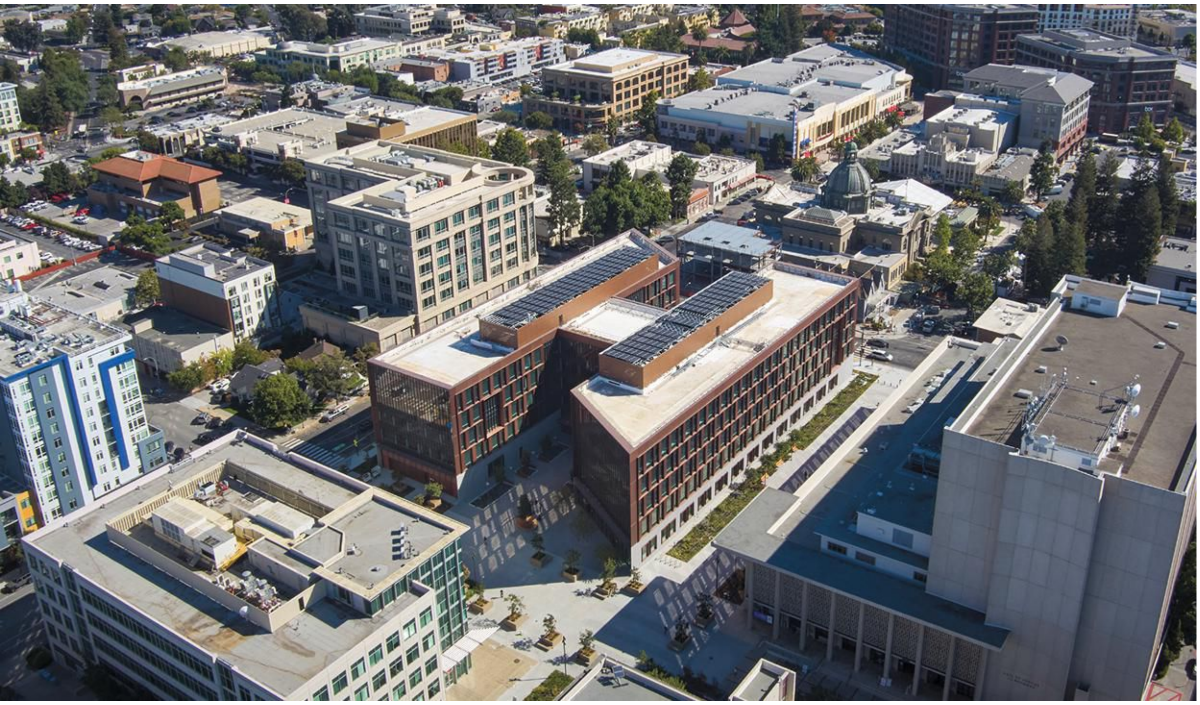


through space between the two plazas and a gathering place. Community rooms—training center, gym, café, and the Chambers of the Board of Supervisors, a room that doubles as a public auditorium—add to the ground-floor activation. Above a white base in precast panels evocative of the granite used in many Bay-Area civic buildings, the center's facade is wrapped in copper-anodized aluminum, which differentiates it from its many white-stuccoed neighbors but alludes to nearby historic brick buildings.

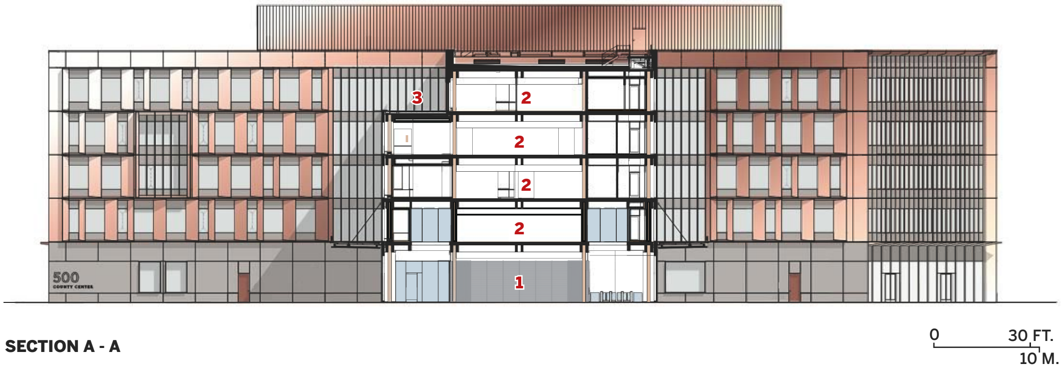
To meet the county's request for a design that kept costs within reason (the square-foot construction cost was $942), SOM considered the limited funds for its initial scheme. "Because the budget was so important," Arizmendi says, "I knew that we had to start on a chassis, let's call it, that was incredibly efficient." Four circulation cores and two office wings allowed for the repetition of elements and for energy efficiency, which limited both construction and operational costs. The designers used simple materials—the concrete at the base, rather than stone, for example. They redirected some of the savings to details that users would experience intimately, such as bronze doors at the entrance and wood handrails in the exit stairwells. Purchasing some materials before Covid-era pricing made them unaffordable also helped the team meet San Mateo County's budget.

SOM used both passive and active elements to reach its clients' third goal of sustainability. Many of the passive factors are associated with managing the abundant California sun; these include a high-performance facade with a window-to-wall ratio of 40 percent and with operable windows used to night flush the building and precool its interior. The H-plan's shallow floor plates help balance daylighting with solar heat gain. Active low-energy strategies also address the lighting load and include automated blinds, LED fixtures, and auto-off systems. In addition, an HVAC system using variable-air-volume and perimeter fan coil units, a heat-recovery chiller, and air-source heat pumps effected a 54 percent reduction in heating energy and a 19 percent reduction in cooling energy, according to SOM.

The designers set an initial energy budget at 23.1 kBtu/SF/year, well below the 33 kBtu/SF/year of a typical office in the area. The center is designed to meet 108 percent of its energy needs



The site is adjacent to other civic buildings (left). Much of the mass timber is exposed (opposite, bottom), with many finishes also made of wood (opposite, top).



SECTION A - A

1 LOBBY/BOARD OF SUPERVISORS CHAMBERS
2 OFFICE
3 TERRACE

with renewables; solar arrays on the rooftop and on the nearby county-owned parking garage, as well as a power-purchase agreement with a local utility, assist in reaching this number. While operational data are not yet available, the new building is on track for LEED Zero Energy certification.

Net zero energy was not SOM's only green goal. "For a building to be truly sustainable," says Arizmendi, "it has to hit the operational-energy side, but also the embodied-energy side." To make what he calls "an ultralow-carbon building," SOM employed a mass-timber structure. The system has roughly 80 percent less embodied carbon than steel or concrete, taking into account the biogenic carbon stored in the wood, and, as a comparatively light structure, it required a smaller foundation and less excavation, contributing to a faster build. (Steel was necessary in the circulation cores and to span the ceiling of the large assembly hall.) Much of the timber structure is exposed, and finishes include Douglas fir and white oak, providing a look that seems on-brand for a former timber town. As San Mateo no longer has a thriving lumber industry, the material was sourced from suppliers in Oregon, Montana, Idaho, and Canada.

The project is the first civic building in the U.S. that is constructed with mass timber and designed to achieve net zero energy. It has been visited as a model of green building by officials from Santa Clara and Sonoma counties and as far away as Australia. Local developers have also toured the work to consider ways to bring its sustainable lessons to Bay Area tech companies (albeit likely to have much larger budgets).

What makes the building

Credits

ARCHITECT: Skidmore, Owings & Merrill — Javier Arizmendi, Keith Boswell, Eric Long, Steve Sobel, Francesca Oliveira, Lonny Israel, partners and principals; Elissa Gee, Matthew Wasylciw, Ty Peterson, Gabriella Giungato, Rachel Johnson, Francke Wurzelbacher, Enrique Acosta, project team

CONSULTANTS: Skidmore, Owings & Merrill (structure); Atelier Ten (sustainability); Cosco Fire Protection (fire/life safety); Meyers+ Engineers (AV/IT/security/acoustics/m/e/p/fp/commissioning); CMG Landscape Architecture (landscape)

GENERAL CONTRACTOR: Truebeck Construction

MASS TIMBER SUBCONTRACTOR: Western Wood Structures

CLIENT: San Mateo County—Project Development Unit

SIZE: 207,000 square feet

COST: $195 million (construction)

COMPLETION DATE: September 2024

Sources

MASS TIMBER: SmartLam North America, DR Johnson, CoreBrace

METAL CLADDING: POHL, Hydro, Linetec, IFS Coatings, Morin

GLAZING: AGC Glass Unlimited, AGC Interpane, Vitro, GlasPro, TGP, Glassfab

DOORS: Florian Industries, Curries, VT Industries, Panda Windows & Doors

HARDWARE: Schlage, Von Duprin, CRL, HID

ACOUSTICAL CEILINGS: Armstrong World Industries, Turf, Arktura, Rulon International

SPECIAL SURFACING: 3form

TILE: Marazzi, Royal Mosa, Heath Ceramics, Fireclay Tile, Design and Direct Source

LIGHTING: Lumenwerx, USAI, Glint, Bocci, Zaniboni, Extant, BEGA, Juniper, Neri

BATHROOM FIXTURES/ PARTITIONS: American Standard, Kohler, Grohe, Elkay, Bobrick

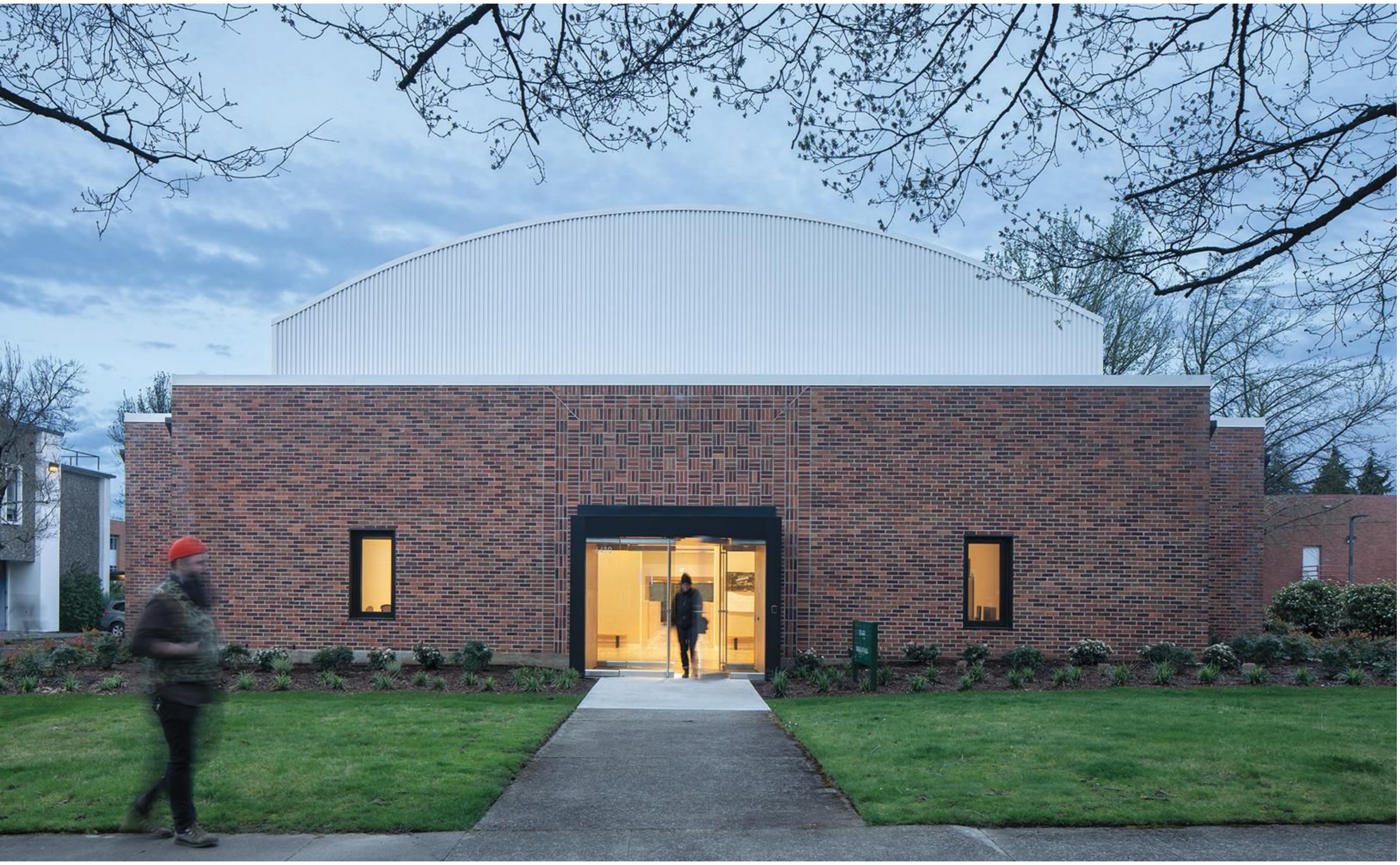
truly sustainable may have less to do with its innovation than with the experience of occupying it. The center—with its inviting entrance, warm wood tones, cozy break rooms and breakout spaces, and a broad terrace facing downtown—seems a comfortable place to work. During a short site visit, on three separate occasions, employees, unprompted, were effusive about their happiness with their new office. "They love to come to work," one woman said of her colleagues. "They used to work remotely; their old office was terrible." If these few opinions are representative, then 500 County Center has good prospects for sustainability as a building that people will want to use for many years to come. ■

HIGHLAND HALL | PORTLAND, OREGON | LEVER ARCHITECTURE

Odd Duck

The University of Oregon's architecture program transforms a disused 1950s gym into its Portland home.

BY RANDY GRAGG
PHOTOGRAPHY BY LARA SWIMMER



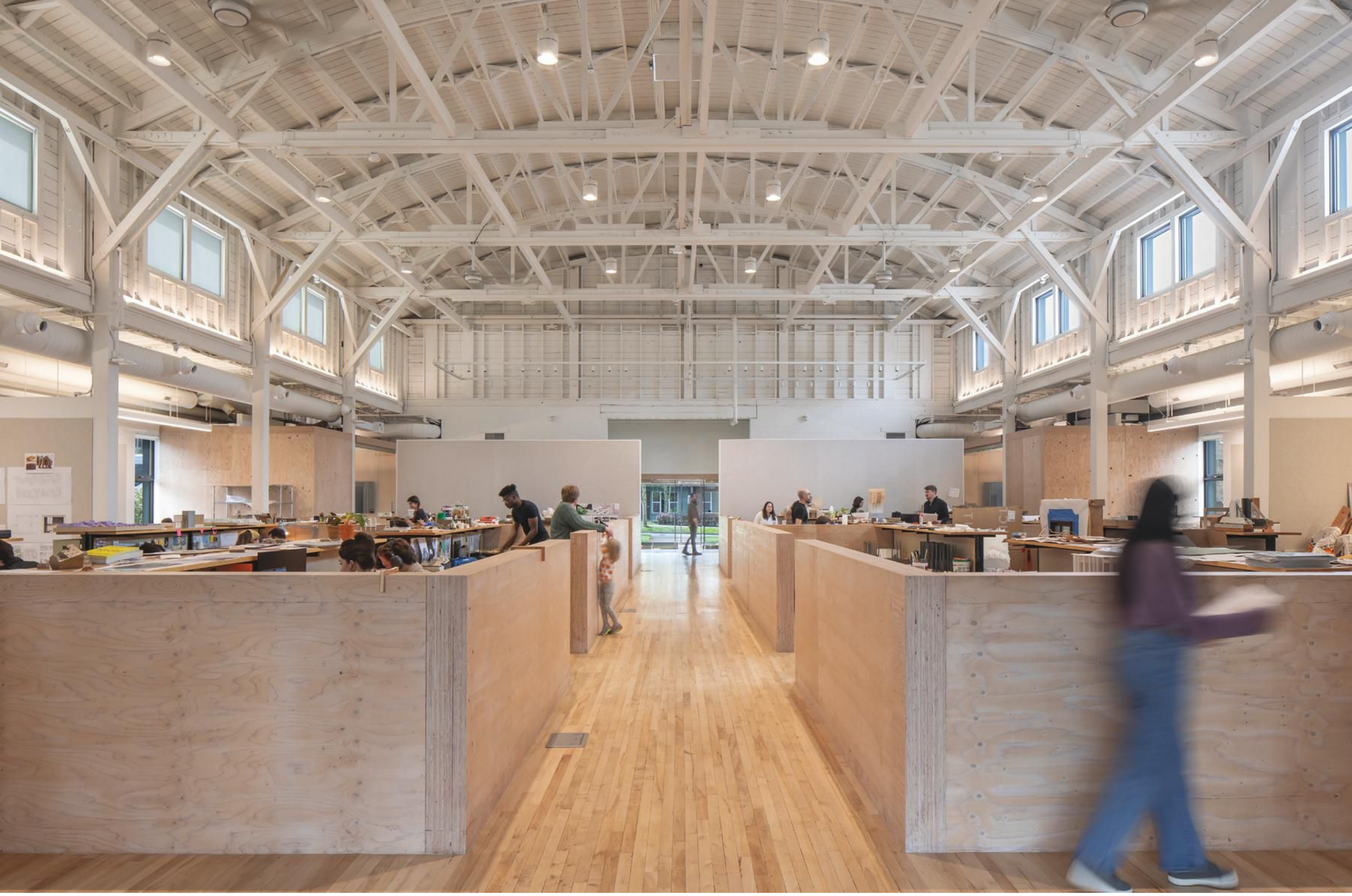
WHEN the Eugene-based University of Oregon bought the defunct Concordia University to house its Portland campus in 2022, department directors had to puzzle their programs into a dozen mostly 1970s and '80s-era buildings. The College of Design's Portland architecture school decided to take the building widely regarded as the runt of the litter: a 1950s gymnasium converted into a theater three decades ago. "Nobody really wanted it," says Justin Fowler, director of UO Portland Architecture, but he and his colleagues saw potential.

UO tapped Portland's Lever Architecture to transform the building. Upon first sight, the old gym-turned-theater's proscenium stage, green rooms, and overall darkness, "reminded me of my junior high school auditorium," says Lever founding principal Thomas Robinson. But when the team punched through the dropped ceiling and scraped away a patch of the floor's black paint, a "diamond in the rough" emerged in rustic timber bow trusses, long-covered clerestory windows, and maple floors.

Now reclaimed and renewed, the program's new home—called Highland Hall—is a study in reuse, restraint, and economy.

With a deadline of one year for design and construction and a tight budget, "we couldn't afford to design too much," Robinson says, "but we could spend a lot of time thinking about the design we were doing."

At ground level, the 8,640-square-foot building was an almost windowless brick box, but



also one of the few campus structures directly facing an adjacent residential neighborhood in Northeast Portland. With simple insertions of glass entries at each end, the unassuming midcentury structure now provides gracious front doors to the neighbors and the campus behind it while serving as a visual portal between them.

Lever replaced the boarded-over clerestories with a glazing system that bathes the space in sunlight. Eleven new ground-level windows provide additional light, anchor the interior experience to its surroundings, and, for the tiny faculty offices, offer a sense of greater space. Reversible fans and ceiling vents draw air in or expel it, to moderate temperatures.

Now exposed and steel-reinforced, the bowstring trusses shape a barrel-vaulted ceiling, 32 feet high at the peak. Seminar rooms, spaces for pinups, restrooms, and a kitchenette are neatly tucked into the perimeter. A gallery positioned just inside the front entrance buffers studios from faculty and provides a gathering spot for lectures and reviews. "We didn't want to be hovering over the students," Fowler says.

The most notable architectural insertion is a series of 7-inch-thick mass-plywood slabs that frame the vestibules around the front and rear entrances. They also serve as partial-height partitions to divide the four studios and enclose the seminar rooms. The slabs lived their first life as floor panels used for seis-

Glazed entrances, and windows inserted into the brick facade (opposite), flood the interior (above and right) with daylight.

Facing an adjacent neighborhood, the building emphasizes transparency inside (opposite, both) and out (left).

mic testing by the TallWood Design Institute's Emmerson Advanced Wood Products Laboratory at Oregon State University. Robinson discovered that an enterprising OSU student had catalogued the remnants. Testing stresses precluded any structural reuse, so he convinced the Institute to donate the materials and the cost of CNC machining. "We reused something that would have just been thrown away," he says.

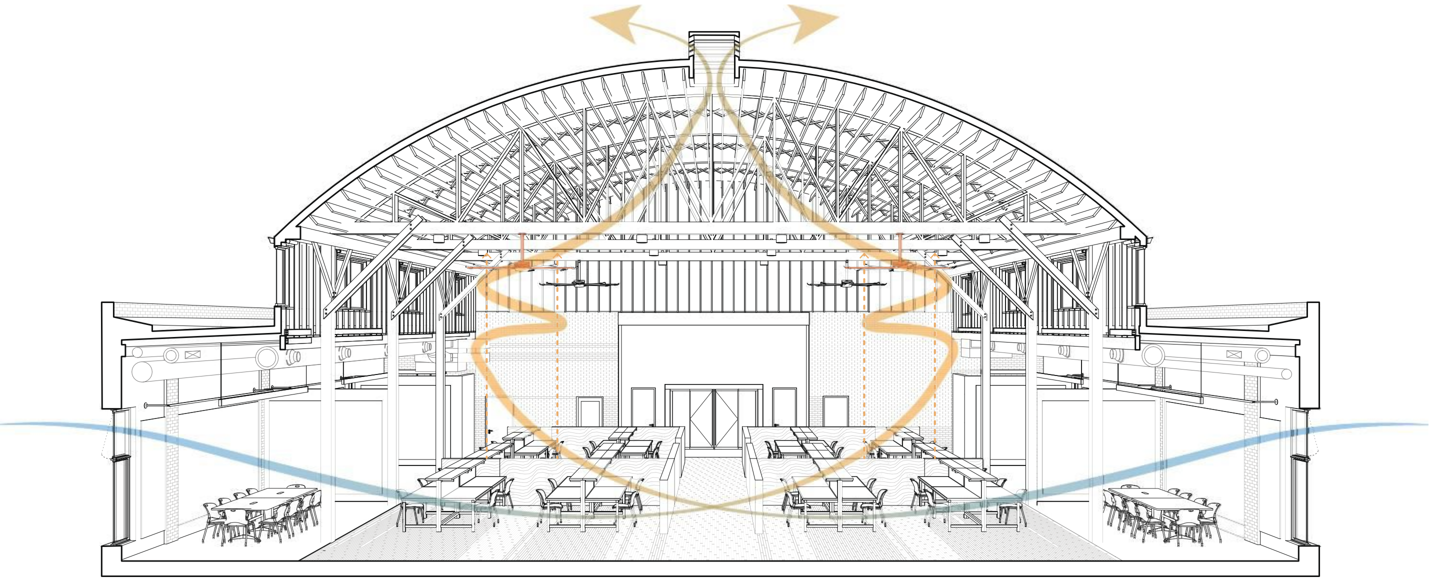
Fowler's overriding aim was "to serve the students." Both he and Robinson favor schools that gather studios in one space. Indeed, the 36 workstations take center stage. Lever sized them so that tables from the program's former home could be reused. The mass-plywood panels surround and divide the cubicles into pods, forming a grid that gives the space architectural muscle.

Highland Hall's good bones and Lever's light touch imbue the old gym with a near-ecclesiastical air. White paint applied to the trusses, exposed wood, and masonry structural elements (the ply panels were treated with a whitewash sealer) unifies the overall space. The rooms and pinup spaces symmetrically arranged on each side recall the side chapels lining the nave of a church, and the thick studio partitions, pews.

"By surgically removing and revealing and bringing material character to the space, we created a place that we hope is inspiring to the students," says Robinson.

Some lamented the program's move five miles from downtown's historic White Stag Block, a structure adapted to become the university's Portland satellite campus only 17 years ago. Fowler and his colleagues, however, observe a stronger camaraderie among students at UO Portland Architecture's new home, which has become a first stop on donor tours of the former Concordia campus's reinvention.

While missing the cafés and bars and views of the bustling downtown location, students generally agree on the success. "We had apprehensions about the move," says Nicole Stout, a recent grad who studied at both Highland Hall and its predecessor



SECTION PERSPECTIVE

space. “I picked the downtown-campus program to be in an urban space, but Highland accomplished a lot of things in terms of community.”

“It’s very concise and straightforward,” says Robinson of Highland Hall. “It amplifies what’s happening inside. I think it’s important for architects to demonstrate the value of what they do, and architecture school should be the first place to do that.” ■

Randy Gragg is a Portland, Oregon-based writer on landscape, urban design, and architecture.

Credits

ARCHITECT: Lever Architecture

ENGINEERS: Valar Consulting Engineering (structural); Arris Consulting (mechanical); Reyes Engineering (electrical)

CONSULTANTS: O-LCC Lighting Design; Soderstrom Architects (roof design and masonry restoration)

GENERAL CONTRACTOR: Howard S. Wright

CLIENT: University of Oregon

SIZE: 8,640 square feet

COST: withheld

COMPLETION DATE: September 2024

Sources

HELICAL WALL TIES: Simpson Strong-Tie

MASS PLY PANELS: Freres Engineered Wood

ROOFING: Carlisle, Siplast

GLASS: Guardian

ENTRANCES: Assa Abloy

INTERIOR FINISHES: Armstrong (acoustical ceilings); Wilsonart (plastic laminate); USG (suspension grid)

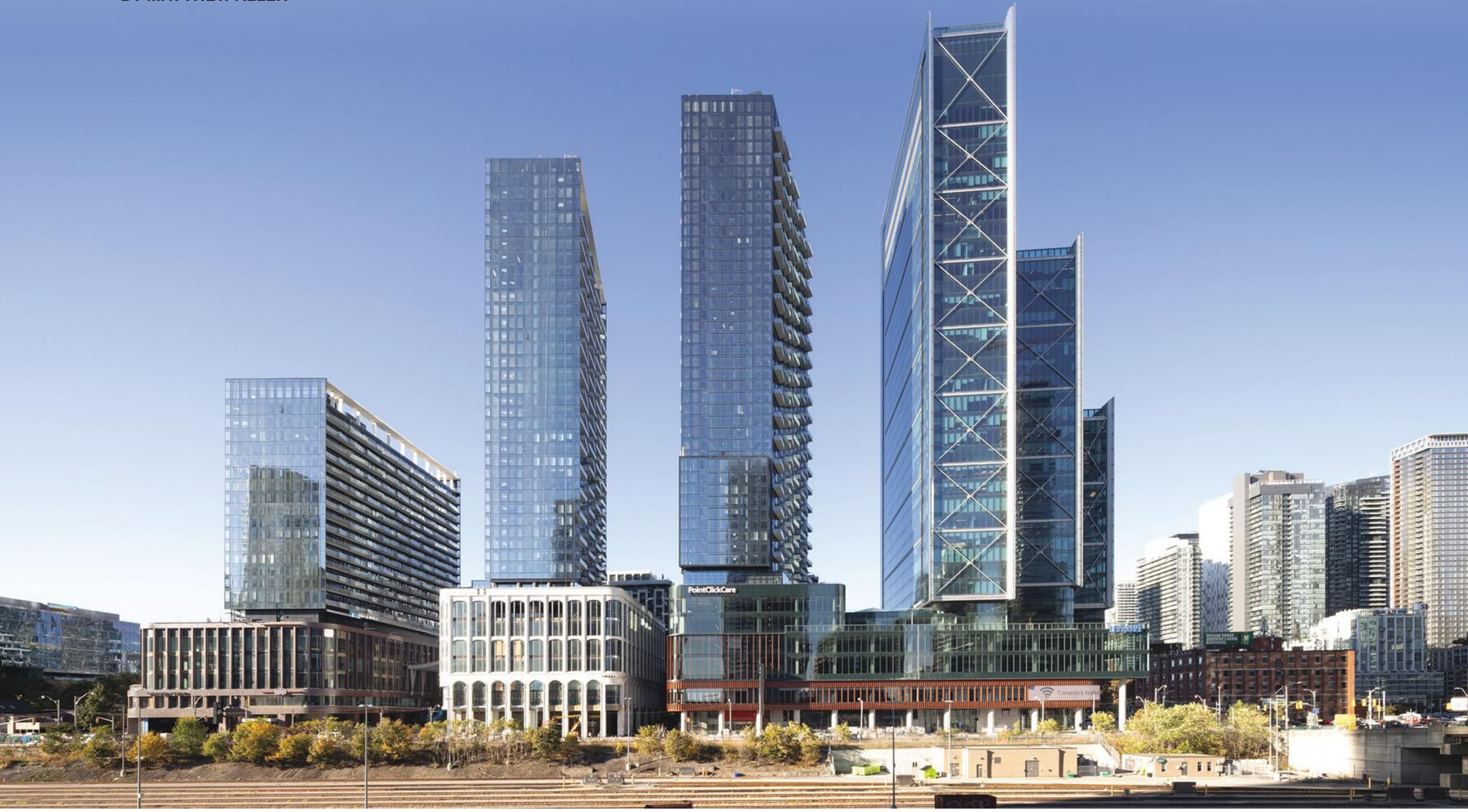
HARDWARE: Schlage (locksets, pulls); LCN (closers); Von Duprin (exit devices)

THE WELL | TORONTO | HARIRI PONTARINI ARCHITECTS

Test the Waters

A mixed-use development aims for environmental and social responsibility on a grand scale.

BY MATTHEW ALLEN



IN ITS BEST new megaprojects, Toronto has developed a distinct approach to urbanism that aims for environmental and social sustainability, but the characteristic modesty of local architects sometimes makes their city-building style difficult to see. This conundrum is epitomized by The Well, a 3 million-square-foot mixed-use development just completed at the edge of downtown, which involved six architects from Toronto and beyond. One office tower, three residential towers, and three stepped residential volumes sit atop seven chunky masses, all calibrated to fit the site's many different adjacencies.

The civic importance of the development required careful negotiation among the players involved and added further complexity. The eight-acre site along Front Street—up until the 1850s, a waterfront promenade—was vacated by the *Globe and Mail* newspaper in 2016 following acquisition of the property in 2012 by a partnership of the real-estate investment trusts RioCan and Allied and the developer DiamondCorp. It was a rare large plot next to the financial district and along a major thoroughfare. "Potentially a once-in-a-career opportunity," says Andrew Duncan, chief investment officer of RioCan.

The vision for the site was settled in 2014 by a master-planning team of Hariri Pontarini—a Toronto-based architecture practice founded in 1994 by Siamak Hariri and David Pontarini—plus the Montreal-based landscape architect Claude Cormier and the Toronto planning firm Urban Strategies. Early renderings promised a combination of mid- and high-rise, old and new, commercial and residential to bridge the divide between downtown and the surrounding neighborhood. In the architects' site model, slabs of walnut established a roughly five-story datum matching nearby mid-rise buildings, with paper and plexiglass extrusions meant to echo the skyline of the financial district to the east. A pedestrian zone cutting through the

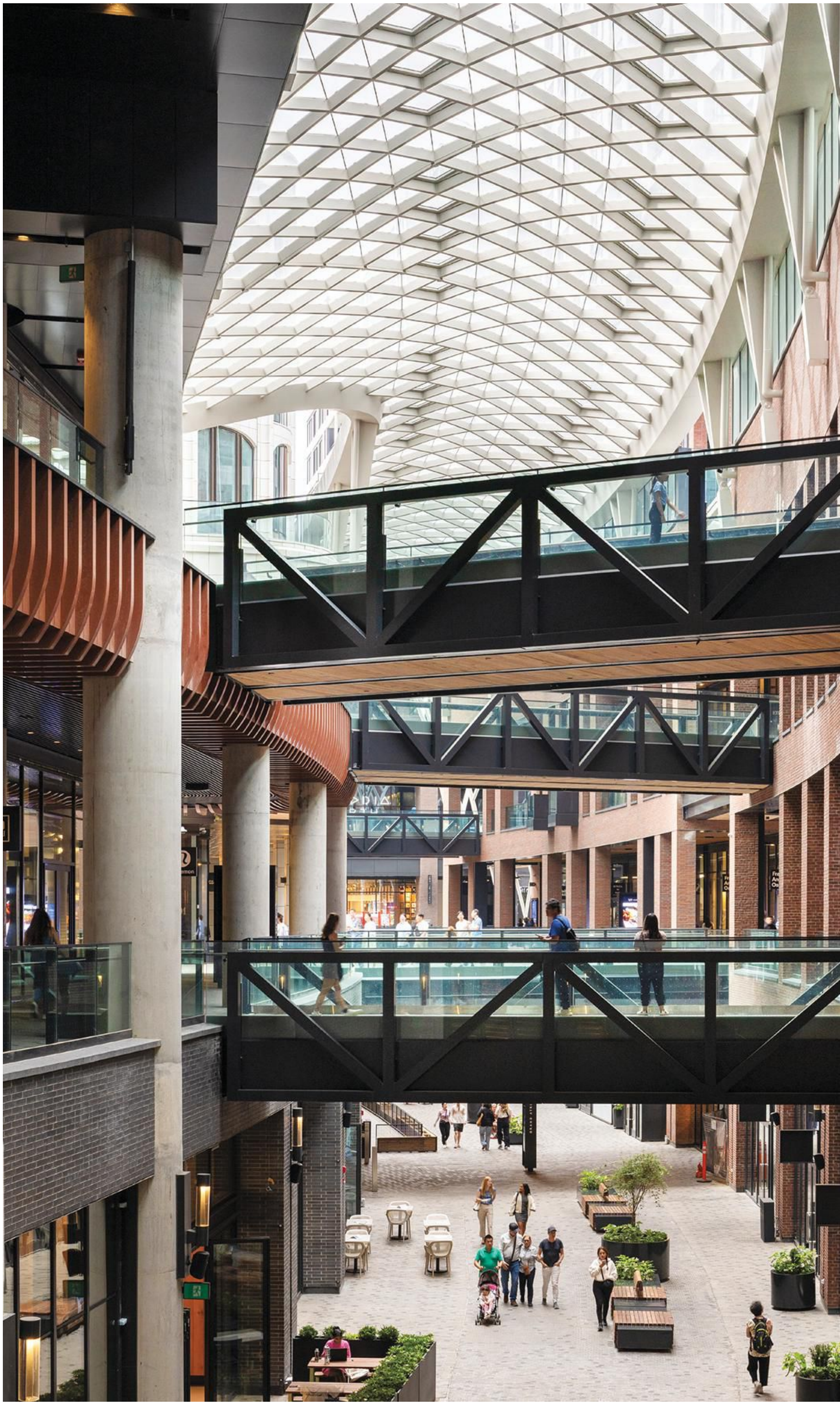
One office tower, three residential towers, and three residential blocks comprise the development (opposite). A shopping street covered by a glazed canopy (right) connects them at ground level.

center of the site completed the parti. “Blocks in this area were zoned industrial and are some of the biggest in the city,” says Michael Conway, Hariri Pontarini associate partner. “We wanted to make it porous by connecting to the alleyways of the neighborhood, and create the potential for discovery—like finding a hidden nightclub.”

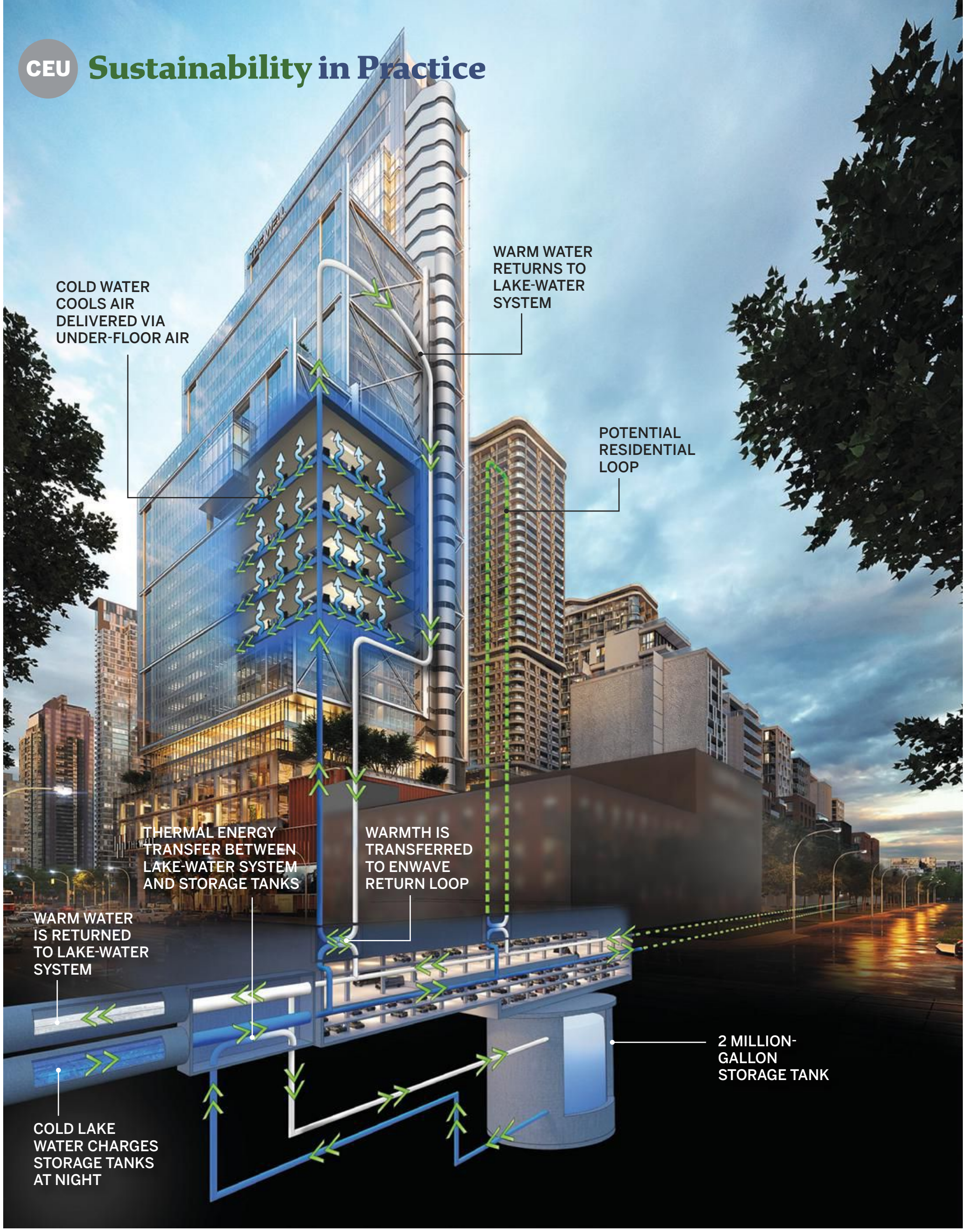
Since then, all eyes in the city have been on the intersection of Front and Spadina Avenue. The Well is the most prominent of Toronto’s many current mega-projects. Its location is only half the reason. Just down the street is Fort York, where Americans achieved a pyrrhic victory in 1813. The other way is Union Station, and across the below-grade rail yard alongside Front Street is the most conspicuous development of a previous boom, CityPlace. The other half of the reason for The Well’s notoriety—at least among urbanists—is this juxtaposition. Completed between 2003 and 2020, CityPlace’s expanse of 30 residential towers on 45 acres with only 200,000 square feet of retail is functionally homogenous, and it often feels bereft of life. In comparison, The Well’s 320,000 square feet of retail on a site less than a fifth the size practically guarantees an energetic bustle.

The Well could easily have become a shopping island. Peering east, a stadium, an arena, and a convention center are all within walking distance—but close is still too far away for retail. Is The Well sufficiently enticing to draw in the crowds ambling home after a Jays game? The project’s big move is to open cavernously at the corner. Escalators invite pedestrians both up and down to shops and eateries in a three-story midblock atrium capped by a glass-and-steel canopy. The whole thing is open-air—in a big way at the three endpoints of its overall T shape, and through alley-like passages along the way. It’s not a mall, typologically, and not a shopping street either, but a distinct urban retail type fitting Toronto’s climate and population. Though not conditioned, a pleasant breeze cuts through the canopied atrium in the summer. In the winter, “you can unzip your parka, but you don’t need to take it off,” remarks Adrian Price, a principal at BDP, the British firm that designed the canopy and the retail environment. BDP has experience with similar spaces—for instance at Westgate in Oxford, England—but such glass-covered atria are also a Toronto specialty: the largest downtown mall is covered with one, and so is a nearby galleria by Santiago Calatrava.

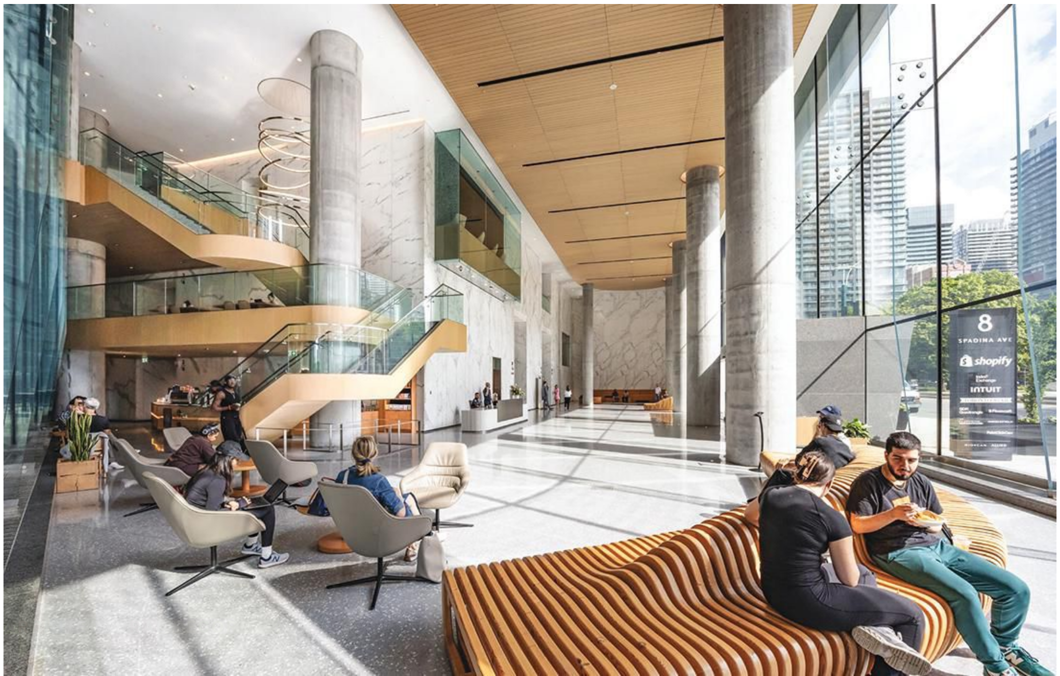
Visitors to The Well might think that the canopy, especially following a few years of patination, was fit between mostly existing buildings, but, save for a single brick-clad holdout at the northeast



PHOTOGRAPHY: © BDP/NICK CAVILLE


COLD WATER COOLS AIR DELIVERED VIA UNDER-FLOOR AIR
WARM WATER RETURNS TO LAKE-WATER SYSTEM
POTENTIAL RESIDENTIAL LOOP
THERMAL ENERGY TRANSFER BETWEEN LAKE-WATER SYSTEM AND STORAGE TANKS
WARMTH IS TRANSFERRED TO ENWAVE RETURN LOOP
WARM WATER IS RETURNED TO LAKE-WATER SYSTEM
2 MILLION-GALLON STORAGE TANK
COLD LAKE WATER CHARGES STORAGE TANKS AT NIGHT

DEEP-LAKE-WATER SYSTEM — SUMMER



corner, everything is newly built. Seen through a glass wall, the lobby of Hariri Pontarini's office tower is the most obviously new feature encountered from the street, its Carrara-marbled opulence made less imposing by granite floors and furniture of timber reclaimed from buildings previously on the site. The levels above are wrapped in glass and held tight by thin cross-bracing elements. Most of the other buildings in the development are covered in hand-laid brick on their lower levels, with subtle variations in tone and pattern suggesting the happenstance of time. A significant exception is an elegant block at the center of the atrium clad in creamy glazed terra-cotta tiles and with an arched colonnade. It suggests a distant era of prosperity, even though Toronto's ascent is relatively recent: it only overtook Montreal in population and financial clout a half-century ago.

Visitors probably don't linger on the thought, however, distracted as they are by Toronto's greatest asset—its people! The city has a foreign-born population of nearly 50 percent, and it is therefore relatively young and visibly diverse. This makes people-watching a lively sport, and The Well provides many perches from which to participate. A few visits indicate wide-ranging programming, from pop-up markets to Mexican freestyle-wrestling matches. Visitors are meant to filter in and out of The Well—a surprising gesture of urban generosity that works counter to the conventional retail logic of total immersion. The name of the project comes from Wellington Street, along its northern edge, which Cormier transformed into a grand pedestrian boulevard. The Well bets on social sustainability, pegging its commercial success to the vitality of the surrounding neighborhood.

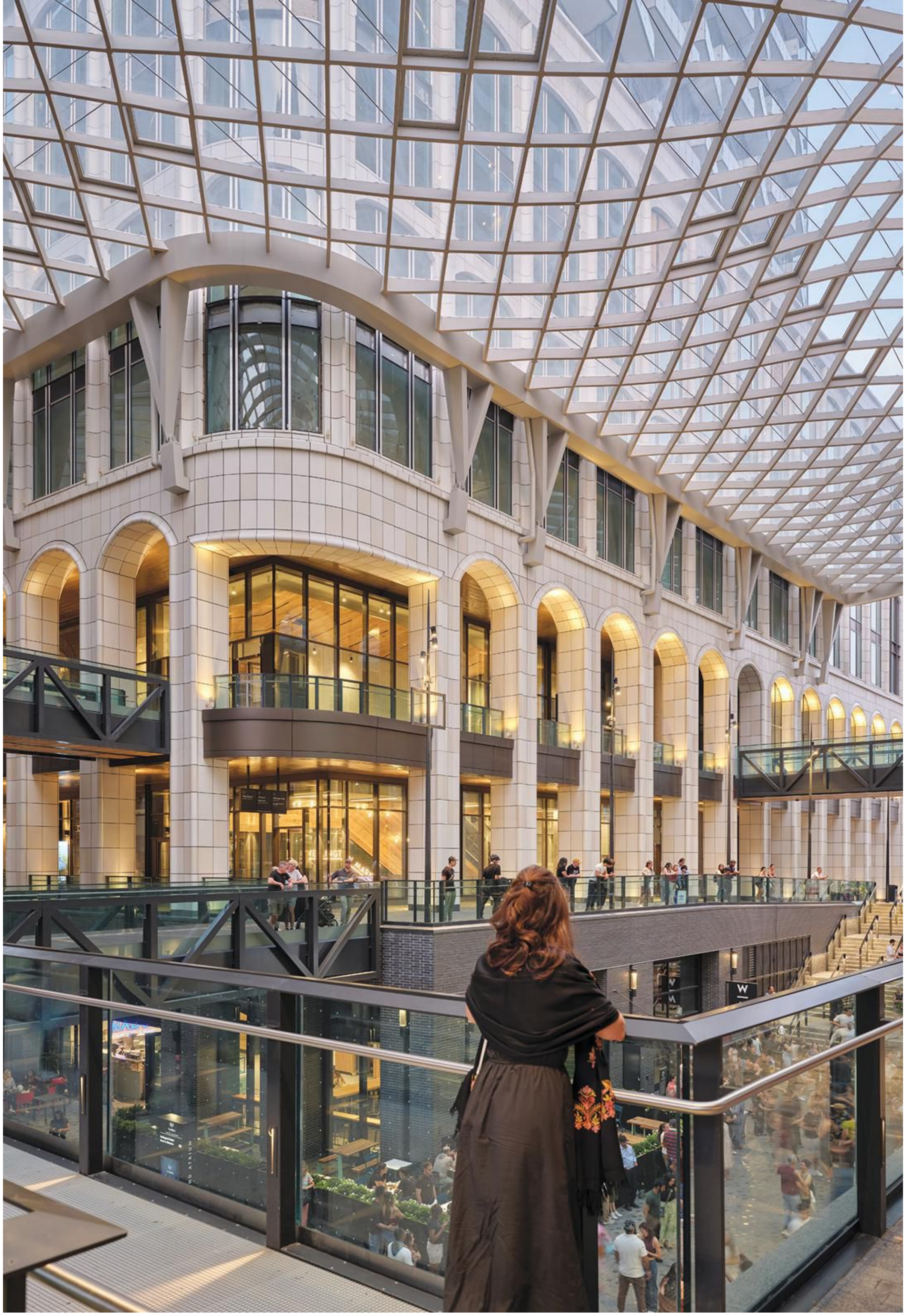
The project's energy sustainability plays out invisibly: below The Well is a 2 million-gallon

IMAGES: © ENWAVE ENERGY (TOP); HARIRI PONTARINI ARCHITECTS (BOTTOM); DOUBLESPACE/YOUNES BOUNHAR (OPPOSITE)

The atrium provides perches for people-watching (right). The office-tower lobby features reclaimed-wood furniture (opposite).

water tank that plugs into an energy-efficient cooling and heating system run by Enwave Energy Corporation. Cold water is pumped in from the depths of Lake Ontario and stored on-site as a thermal battery, which can cool 17 million square feet of space (The Well plus the equivalent of five more projects its size). Enwave shares infrastructure with Toronto's water utility, and its network of pipes already extends throughout the downtown core to more than 200 buildings. It is the largest deep-lake-water cooling system in the world, a centerpiece of the city's net zero ambitions, and it makes good business sense, says Duncan: "Enwave runs the system, so I have less infrastructure to maintain." From The Well's water tank, the system is now poised to expand into a new part of town. This, and other features like green roofs, drought-resistant plantings, high-efficiency drip irrigation, rainwater harvesting, low-flow plumbing fixtures, and on-site stormwater management earned the project LEED Platinum certification; although impressive in aggregate, such features are relatively common for new developments in Toronto.

Questions remain about the future of The Well. Will a possible park capping the adjacent rail yard send the property's value into the stratosphere? Or will nearby projects by BIG and Frank Gehry overshadow the development with the spectacle of ostentatious form and exorbitant cost? Whatever the case, The Well is succeeding by accentuating the city's strengths. It's sustainable, but it has no need to flex its muscles, and it offers a gentle manifesto for an urbanism that draws upon a deep reserve of multicultural vitality. Cosmopolitanism comes easily to Torontonians, and The Well simply serves it back. ■



Credits

DESIGN FIRMS: Hariri Pontarini Architects (master plan + commercial office design); Adamson Associates Architects (executive architect + below grade); BDP (retail + concourse); architects—Alliance (residential towers, Front St. W.); Wallman Architects (residential towers, Wellington St. W.); CCxA Architectes Paysagistes (landscape + public realm); Urban Strategies (urban planners); Giannone Petricone Associates (food hall)

CONSULTANTS: RJC Engineers (structural); Jablonsky Ast & Partners (structural, residential); Mulvey & Banani (electrical); The Mitchell Partnership (mechanical); Novatrend (mechanical/electrical, residential); EQ Building Performance (sustainability); LRI Engineering (fire/code/life safety); Odan/Detech Group (civil)

GENERAL CONTRACTOR: EllisDon, Deltera Construction Management

CLIENT: RioCan REIT, Allied Properties REIT, Tridel, RioCan Living, Woodbourne Capital Canada

SIZE: 3 million square feet

COST: withheld

COMPLETION DATE: November 2023

Sources

MASONRY: Glen-Gery, Boston Valley Terra Cotta

CURTAIN WALL: Antamex, CGI

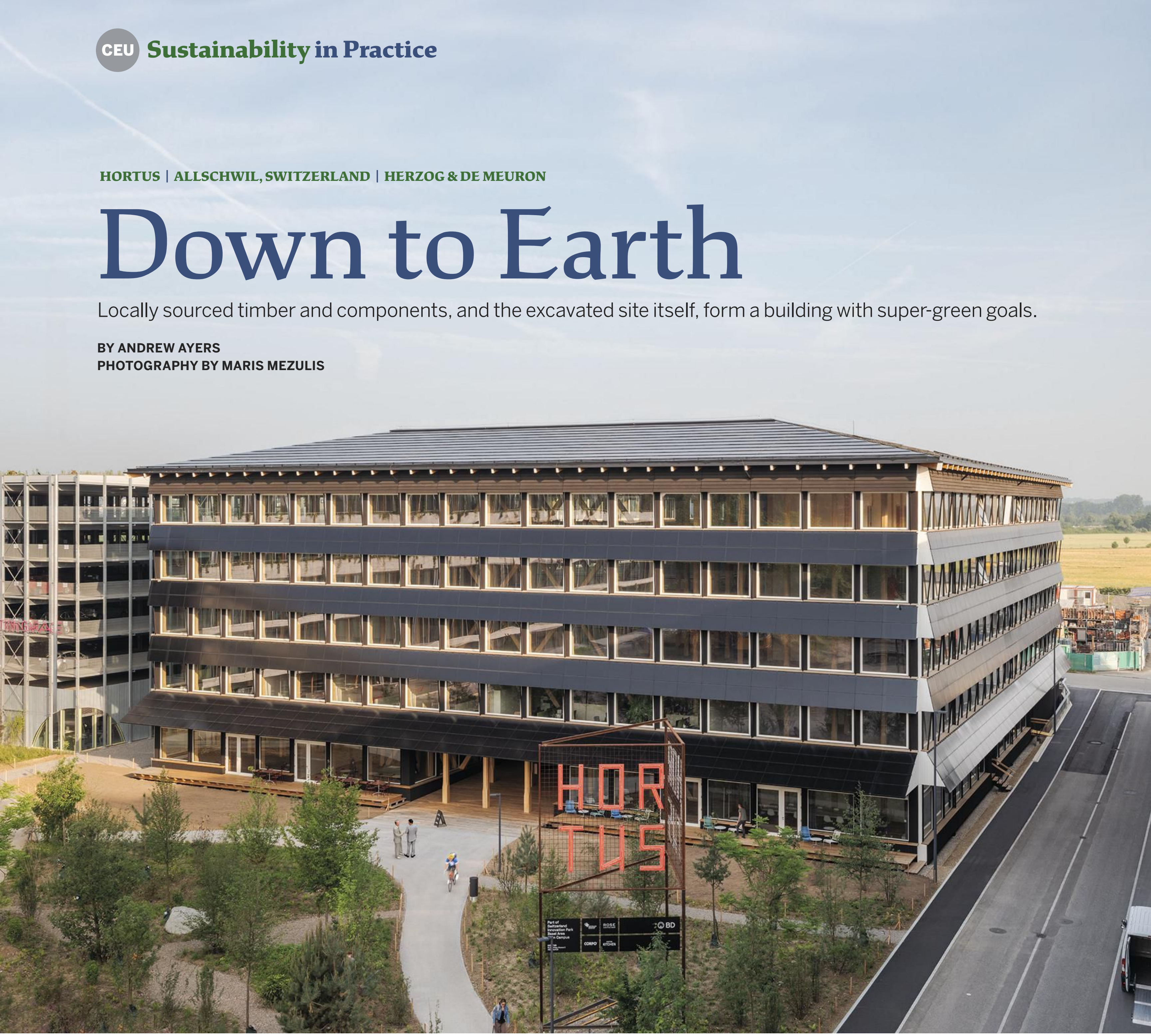
SKYLIGHTS: Gartner

HORTUS | ALLSCHWIL, SWITZERLAND | HERZOG & DE MEURON

Down to Earth

Locally sourced timber and components, and the excavated site itself, form a building with super-green goals.

BY ANDREW AYERS
PHOTOGRAPHY BY MARIS MEZULIS



IN TERMS of construction culture, Switzerland can appear a paradoxical place. On the one hand, it has some of the strictest codes anywhere with respect to building performance and energy expenditure, while on the other, the tiny Alpine country consumes vast amounts of carbon-heavy concrete. Indeed, its annual per-capita production is twice that of neighboring France, according to figures released by the Federal Office of Topography in 2020. With this in mind, it seems quite the paradigm shift when a renowned Swiss firm such as Herzog & de Meuron (H&dM), whose back catalogue includes all-concrete projects such as the Blue House (1980), the House in Leymen (1997), or the Schaulager (2003), sets out to construct a 150,000-square-foot office building using almost no concrete at all. But this was precisely the challenge H&dM took up when developer Senn tasked it with designing the multi-occupant rental project Hortus, located in a life-sciences business park in the Basel suburb of Allschwil. In fact, as project lead Alexander Franz explains, Senn asked for nothing less than “the most sustainable office building in Switzerland.”

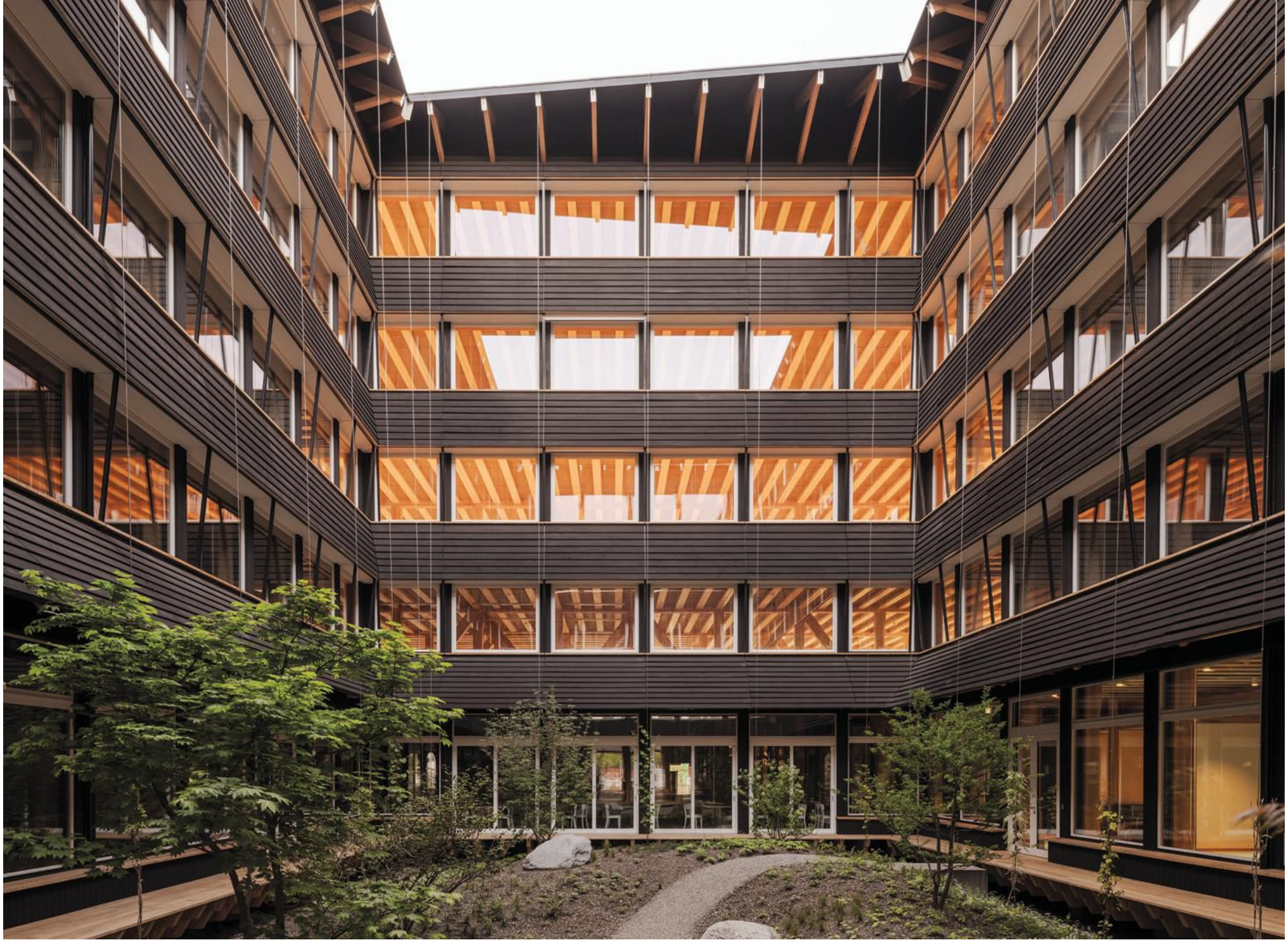
“Instead of a classic program, they gave us sustainability goals,” Franz continues, an approach that entirely upended H&dM’s usual design process. “Normally you look first at the urban scale, the massing, etc., and at the very end you start to consider building components. Here, we started off with the building components, which had to be renewable and

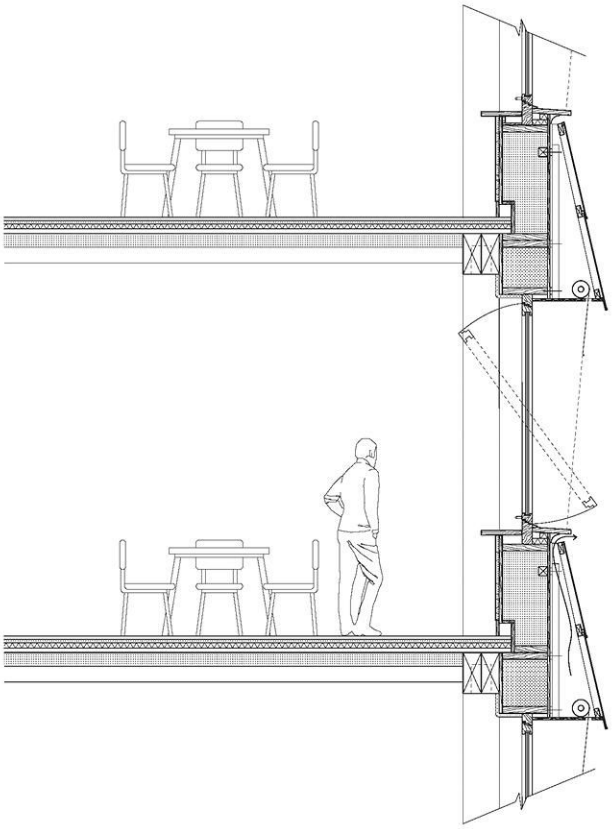
recyclable." Though the architects could not avoid concrete entirely, they used it with extreme parsimony for the foundations, which comprise 6.5-foot-deep footings beneath each column. Above that, timber takes over, with a sturdy frame in locally sourced, engineered beechwood that is cross-braced diagonally to satisfy seismic code. The facade structure, meanwhile, is in spruce, a faster-growing softwood that can be felled much younger than the 100-year-old trees required for the principal frame.

Filling its plot to the perimeter, Hortus wraps around a central courtyard planted by Piet Oudolf to create a cooling microclimate. To ensure plentiful indoor daylight, five airy stories rise in place of the six that code allowed. Since wood might rot in contact with the ground, the first floor hovers just above grade, avoiding the need for any masonry. By eschewing floor-to-ceiling windows—for which Swiss code stipulates triple glazing—Hortus saves 33 percent in glass; instead, openable double-glazed units take their place in elevations that are half solid half void. Initially, H&dM planned to abandon mechanical ventilation, but the developer later backtracked, so the building includes forced-air columns that automatically shut off when tenants open the windows. Since Senn's ambitions included counterbalancing the energy used to construct the building within a generation, the outer facades and the roof sport locally sourced solar panels; the electricity they generate more than meets daily needs, and the surplus is channeled to neighboring buildings run by Senn. In this way, claims H&dM, Hortus will achieve operational and embodied carbon neutrality by 2056.

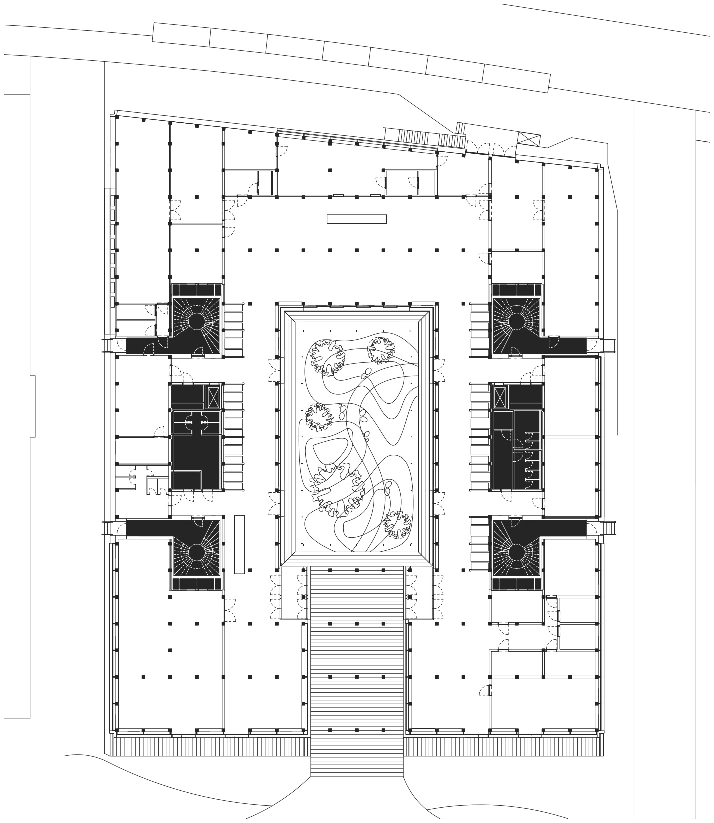
Given its longstanding interest in materials and techniques, the firm could only delight in a brief like this. In lieu of screws, nails, and metal brackets, H&dM's

The five-story timber building (opposite) hovers just above grade and features lush plantings (above and right).

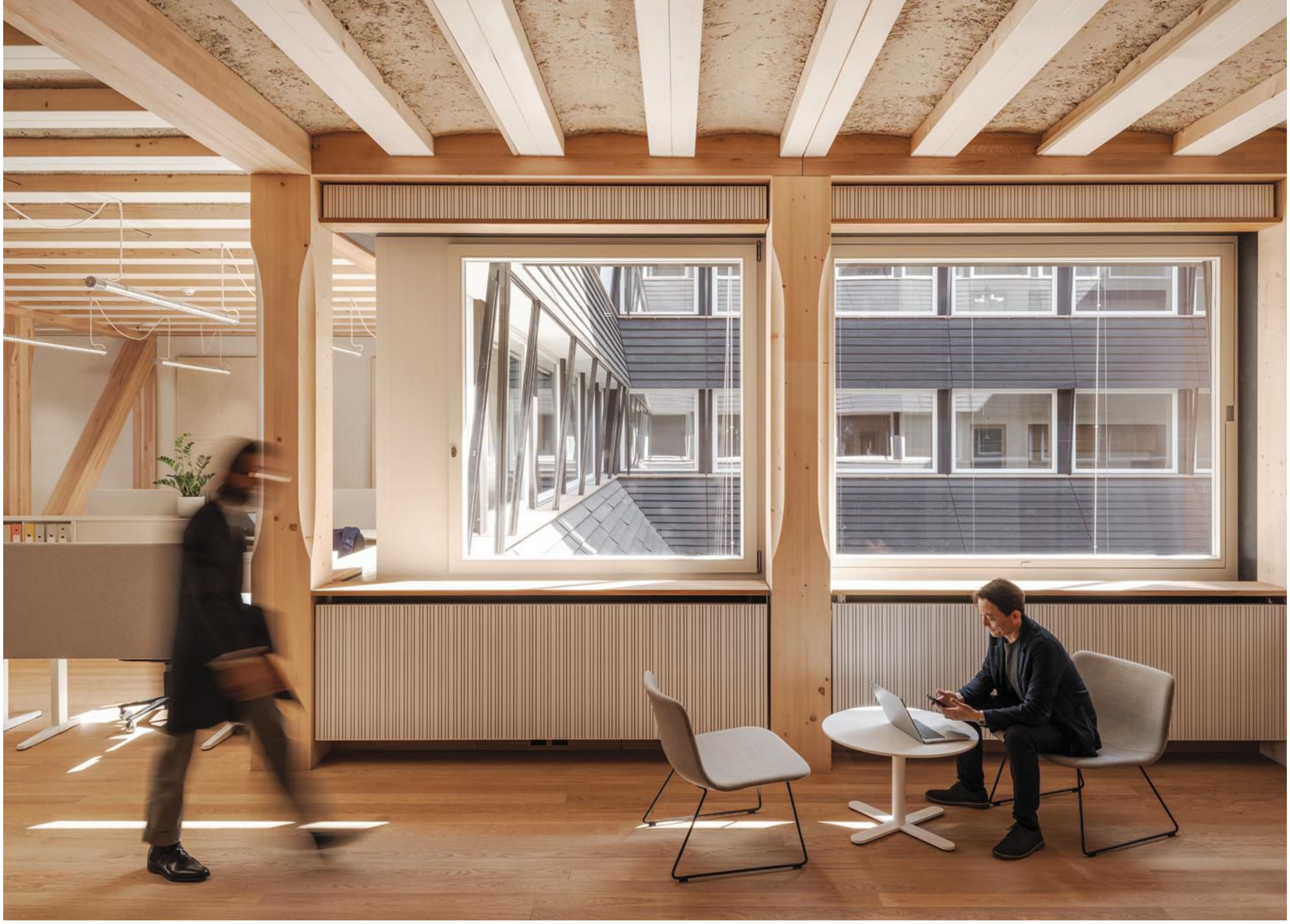




SECTION DETAIL



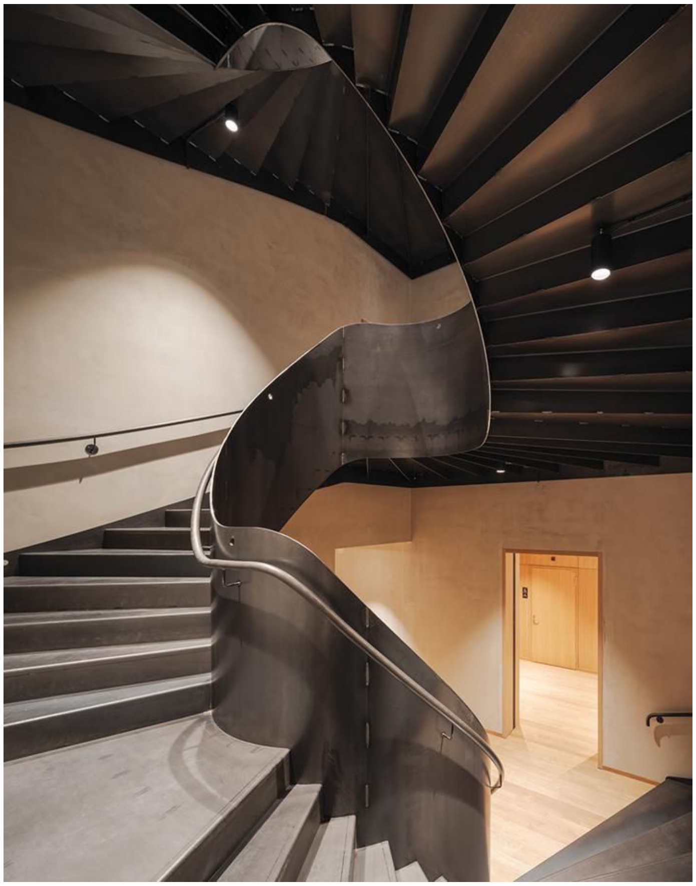
GROUND-FLOOR PLAN



timber frame uses gravity and old-fashioned joinery to hold together, which will make for simplified disassembly at the end of the building's life. Likewise, the fire stairs, which cannot be in a flammable material, are made from beautifully milled and folded steel, which is left entirely untreated—no paint or flooring—to facilitate recycling. Thermal insulation consists of cellulose, 85 percent of which comes from recycled newspapers; there is no carbon-heavy gypsum, since the building's plaster is made from clay; and dry fill is crushed brick waste rather than the sand that usually soundproofs Swiss floors. But the big innovation at Hortus is the vaulted floor slabs, which combine timber formwork with rammed earth sourced on site. The architects claim that, as well as requiring ten times less carbon to construct than a conventional concrete floor, their system provides the thermal inertia that timber structures often lack, something that could not be achieved in the facades, which are 50-percent glazed, nor in the internal partitions, since the project's speculative nature required open floor plans. After investing $1.25 million to develop the technology—a big gamble, since it could have failed to meet targets or satisfy code—Senn has made rents higher than average to recoup costs, hoping to woo tenants with Hortus's environmental credentials and its attractive shared facilities, which include light-filled ground-floor meeting rooms, a spacious restaurant, and a fitness studio.

So what does H&dM's take on a low-carbon future look like? For founding partner Jacques Herzog, the quest for sustainability "will result in unexpected and surprising architecture with a beauty of its own." At Hortus,

The building wraps around a courtyard (opposite and above). The fire stairs are made from folded steel left entirely untreated (right).



The airy ground floor and its covered wooden veranda are accessible to visitors (left).

with its dark solar panels set on projecting eaves, the exterior has the air of a slate-clad pagoda; inside, where materials are mostly untreated, the ambiance is part galleon, part 19th-century mill. H&dM's remit even included low-energy lighting, using only replaceable metal and glass components and incorporating sensors that will help determine if the building really does reach its operational-emissions goal of 5.5 kilograms of CO_2/square meter per annum. But, given the obvious questions of reproducibility—the supply capacity of mature Helvetian beech forests, for example, or the ability of Swiss solar-panel suppliers to compete with China—it seems too early to proclaim this a definitive model. Instead, a life-sciences experiment unto itself, Hortus provides a valuable testing ground for the future. ■

Hortus stands for House of Research, Technology, Utopia, and Sustainability. Its most innovative feature is the floor slabs. H&deM worked with ZPF Engineers to develop a hybrid floor system consisting of rectangular timber elements and clay that is compressed in the form of a vault between the inlaid wood beams. Using a process specially developed for Hortus by Lehm Ton Erde, the clay mixture was produced directly on-site, excavated during construction and shaped into the floor slabs in a field factory next to the building. The clay provides fire protection and serves as a thermal mass in the summer to absorb excess heat.

Credits

ARCHITECT: Herzog & de Meuron — Jacques Herzog, Pierre de Meuron, partners; Stefan Marbach, partner in charge; Alexander Franz, associate

ENGINEERS: ZPF Ingenieure (structural); Anima Engineering (mechanical)

CONSULTANTS: Lehm Ton Erde (rammed earth); Christoph Etter Fassadenplanungen (facade); Planeco (solar); Aegerter & Bosshardt (fire safety); Reflexion (lighting); Kopitsis Bauphysik (building physics); Piet Oudolf, Stauffer Rösch (landscape)

CLIENT: Senn Resources

SIZE: 151,770 square feet

COST: withheld

COMPLETION DATE: May 2025

Sources

TIMBER FLOORING: Gashi

JOINERY: Häubi, Erne AG Holzbau

METALWORK: Ferdinand Hasler

LIGHTING: Zumtobel

ELEVATOR: Otis

FURNITURE: Girsberger (fixed), Vitra

PHOTOGRAPHY: © DAVID WALTER (BOTTOM 2)

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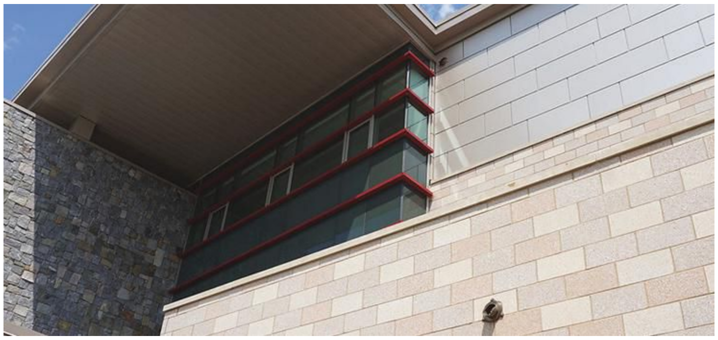

CMU Embodied Carbon: From Simple Walls to Whole Buildings

AUGUST 14, 2025 AT 2:00 PM EDT

1 AIA LU/HSW; 0.1 ICC CEU

Participants will examine mini-LCA wall comparisons that demonstrate CMU's carbon benefits, then explore a prototype mixed-use building case study that scales these advantages to the structural level. The course emphasizes how efficient design strategies—including modular coordination, optimized structure and strategic grout and reinforcement placement—serve as major drivers for both carbon reduction and cost savings.

THE BEAUTY OF BLOCK

Designing and Specifying Glass Entrance Systems

AUGUST 19, 2025 AT 2:00 PM EDT

1 AIA LU/HSW; 0.1 ICC CEU

This course covers current topics in glass entrance design and key considerations when selecting door hardware. Participants will receive an overview of specification criteria to ensure glass entrances and doors comply with safety, accessibility, and performance requirements while meeting the visual goals of the project.

CRL®

Why Waterproof Balconies Fail: Design and Remediation Strategies for Commercial and Residential Projects

AUGUST 20, 2025 AT 2:00 PM EDT

1 AIA LU/HSW; 0.1 ICC CEU

This webinar investigates the most common reasons waterproof balconies fail, including poor drainage, incompatible materials, and misaligned construction sequencing. It highlights how these issues compromise structural integrity and indoor environmental quality.

pg polyguard

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In this section, you will find seven compelling courses highlighting creative solutions for tomorrow's buildings brought to you by industry leaders. Read a course, and then visit our online Continuing Education Center at ce.architecturalrecord.com to take the quiz free of charge to earn credits.

Photo courtesy of Propane Education & Research Council

Energy Solutions for Commercial Buildings

Sponsored by Propane Education & Research Council

CREDIT: 1 AIA LU/HSW; 1 GBCI CE HOUR; 1 IDCEC CEU/HSW; 0.1 ICC CEU

EM | SI | SU

Photo courtesy of Specified Technologies Inc.

SECTION 078413 -
THROUGH-PENETRATION FIRESTOPPING
p96

Firestop Specifications

Sponsored by Specified Technologies Inc.

CREDIT: 1 AIA LU/HSW; 1 IIBEC CEH; 0.1 ICC CEU

PM | SU | LS

Photo courtesy of National Glass Association

Security Glass and Glazing Systems

Sponsored by National Glass Association

CREDIT: 1 AIA LU/HSW; 1 GBCI CE HOUR; 1 IDCEC CEU/HSW; 1 IIBEC CEH; 0.1 ICC CEU

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Propane Essentials

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PM | RE | SU

Photo courtesy of TAMLYN

CORTONA
p102

Fundamentals of Perimeter Acoustical Ceiling Trim

Sponsored by TAMLYN

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BE | RE | SI

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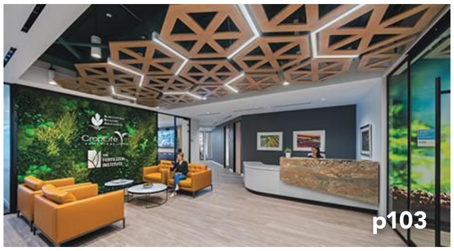


Restorative & Regenerative Design as Holistic Design Approach

Sponsored by Garden On The Wall

CREDIT: 1 AIA LU/HSW; 1 GBCI CE HOUR; 1 IDCEC CEU/HSW; 0.1 ICC CEU

PM | SU | RR

Photo courtesy of PCI

Precast Concrete Elements and Systems for Building Enclosure

Sponsored by The Precast/Prestressed Concrete Institute (PCI)

CREDIT: 1 AIA LU/HSW; 1 GBCI CE HOUR; 1 IDCEC CEU/HSW; 0.1 ICC CEU

PMD | PM | SU

CATEGORIES

BE	BUILDING ENVELOPE DESIGN
EM	ELECTRICAL AND MECHANICAL
LS	LIFE SAFETY AND CODES
PM	PRODUCTS AND MATERIALS
PMD	PRACTICE, MANAGEMENT, DIGITAL TECHNOLOGY
RR	RENOVATION AND RESTORATION
RE	RESIDENTIAL
SI	SITE INFRASTRUCTURE DESIGN
SU	SUSTAINABILITY

Courses may qualify for learning hours through most Canadian provincial architectural associations.

Circumstances around businesses are increasingly uncertain. Yet, providing power and services should always be dependable. Using a site-based, clean, and abundant energy source means providing reliability for the structure and its occupants.

Photo courtesy of Propane Education & Research Council

Energy Solutions for Commercial Buildings

Achieving top performance and low-cost operation for commercial new builds and retrofits

Sponsored by **Propane Education & Research Council**

By Amanda C Voss, MPP

CREATING RESILIENCE BY DESIGN

Commercial buildings and the businesses they support are particularly vulnerable to natural disasters, power outages, and other unforeseen events. Severe weather, mandated downtimes, and other incidents can cause unexpected power outages. Planning for future challenges, both anticipated and unforeseen, is imperative to ensure that a building project will protect occupant safety and comfort. That means designing for resilience.

The electrical grid in the United States is a complex network that provides energy to millions of homes and businesses, putting it at the center of the nation's economy. Nearly all aspects of commerce and industry depend on affordable and readily available sources of energy. However, the grid is vulnerable, with outages costing the U.S. economy approximately $150 billion each year.[1] The aging U.S. electrical grid was not designed to deal with the severity or frequency of extreme weather events and is vulnerable to outages and damage that may be caused by them. Over 70 percent of the grid is more than 25 years old and will need replacing in the coming decades.[2]

The leading cause of electric power outage events is extreme weather events, including coastal flooding, heat waves, ice storms, droughts, wildfires, and winds from severe storms. No part of the country is immune to natural disasters. Indeed, the five states with the most weather-related outages between 2000 and 2023, according to findings from Climate Central, stretch from coast to coast: Texas (210), Michigan (157), California (145), North Carolina (111), and Ohio (88).[3] Within the past few years, snowstorms have caused widespread power

CONTINUING EDUCATION

1 AIA LU/HSW

1 GBCI CE HOUR

1 IDCEC CEU/HSW

0.1 ICC CEU

Learning Objectives

After completing this course, you should be able to:

1. Analyze the opportunities created by propane that enable architects to overcome challenges when designing commercial buildings in areas with restricted infrastructure or other limitations.
2. Through an examination of applications and case studies, assess how propane can be used in large campus projects, such as warehouse facilities and schools, to provide reliable, cost-efficient, and sustainable energy, and achieve LEED certification.
3. Investigate uses for propane that solve commercial design challenges by providing space savings and flexibility.
4. Demonstrate how designing with propane can help commercial buildings meet resilience and sustainability goals that maximize health, wellness, and occupant comfort.

To receive AIA credit, you are required to read the entire article and pass the quiz. Visit **ce.architecturalrecord.com** for the complete text and to take the quiz for free.

AIA COURSE #K2412R

outages in the Northeast, deadly hurricanes have ripped through the Gulf Coast, and wildfires and power outages have struck California. In 2022, California accounted for 24 percent of all U.S. power outages, through a combination of unplanned power outages and utility-initiated de-energization events called Public Safety Power Shutoff (PSPS) outages, which occur when there are potentially dangerous weather conditions in fire-prone areas.[4] During these events, power is proactively turned off to reduce the threat of wildfires.

On a day-to-day basis, businesses also experience increased price volatility, higher capacity charges to ensure electricity supply during peak periods, and replacement costs for failing energy infrastructure. These costs are often passed on to consumers. Additionally, a lack of transmission capacity to deliver the lowest-cost generation, known as grid congestion, costs consumers an estimated $20.8 billion in 2022.[5] Meeting the power, space heating, water heating, lighting, and other critical needs of sparsely populated areas, buildings in extreme climates, or those located within rugged terrain can also be challenging. Energy efficiency and other methods of controlling operating costs are important, as is securing a power source for potential outages.

In areas where natural disasters occur, architects and building owners have discovered the value of designing and operating more durable commercial properties. Resilient building is about more than sturdiness: resilience provides the ability to function after or during an ongoing natural disaster or accidental power outage. As more and more businesses face the threat of property damage and power outages, it's important for both essential and nonessential businesses to keep the lights on and serve their customers.

Answering the Call: The Role of Propane

A clean, reliable, domestically produced, abundant, and affordable energy solution exists to enable building resilience. Propane, sometimes known as liquefied petroleum gas, or LPG, is a gas normally compressed and stored as a liquid. It is nontoxic, colorless, and virtually odorless; an identifying odor is added to the finished product so that leaks can be detected. Propane is commonly used for space and water heating, for cooking, and as fuel for engine applications; its applications are rapidly growing due to new technology developments. Propane is also quickly expanding into commercial construction markets through innovations in commercial tank manufacturing and commercial distribution networks. Propane can now be used for any commercial building application that does not have access to natural gas or where it is cost-prohibitive to extend lines, including new construction, interior construction for new tenants, major renovations, and building efficiency upgrades.

Propane brings all the advantages of gas to buildings, at a competitive price, even if they are off the power grid or public utilities. The U.S. produces more than enough propane to meet demand and is the leading producer of propane. Despite sharp declines in oil prices, domestic propane production is expected to continue to grow rapidly, keeping downward pressure on average propane prices relative to oil prices. Because natural gas is delivered by a network of underground distribution and service pipelines, when deciding what areas to serve, natural gas companies consider the economic return on investment that is necessary to build out their network. Propane, on the other hand, is delivered by vehicles and stored on site in tanks, which allows for more flexibility. It also makes propane prices competitive even in low-density markets. Projects thought to be impossible or cost-prohibitive owing to the lack of access to natural gas are possible because of propane, and projects delayed by the need to construct pipelines can move forward right away with propane. And with the option of aboveground or underground storage tanks, propane professionals can install and connect building systems and other applications on the project team's schedule. Propane also provides jobsite flexibility by providing gas energy for portable generators and temporary heaters.

Photo: LaCasse Photography; courtesy of Propane Education & Research Council

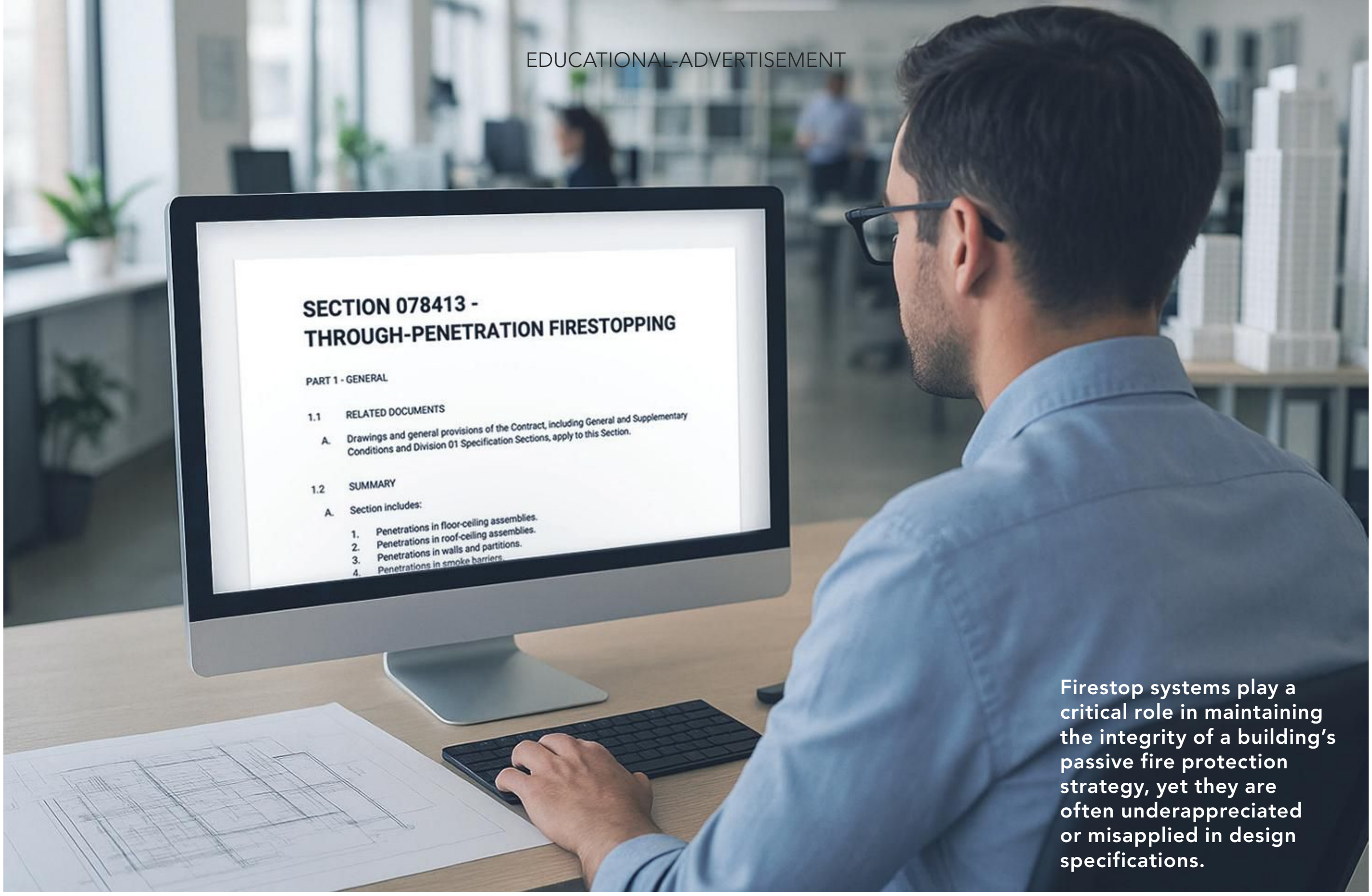
Propane has demonstrated its resilience by performing in areas with sparse population, rugged terrain, and extreme climates. Creede School project in Mineral County, Colorado, designed and built by the Neenan Company, and powered by propane.

▶ Continues at ce.architecturalrecord.com

Amanda Voss, *MPP, is an author, editor, and policy analyst. Writing for multiple publications, she has also served as the managing editor for Energy Design Update.*

ENERGY FOR EVERYONE propane

The Propane Education & Research Council is a nonprofit that provides leading propane safety and training programs and invests in research and development of new propane-powered technologies. PERC programs benefit a variety of markets, including residential and commercial building.



SECTION 078413 -
THROUGH-PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:

1. Penetrations in floor-ceiling assemblies.
2. Penetrations in roof-ceiling assemblies.
3. Penetrations in walls and partitions.
4. Penetrations in smoke barriers.

Firestop systems play a critical role in maintaining the integrity of a building's passive fire protection strategy, yet they are often underappreciated or misapplied in design specifications.

Photo courtesy of Specified Technologies Inc.

Firestop Specifications

Ensuring life safety and code compliance through accurate firestop specification

Sponsored by **Specified Technologies Inc.**

Written by Andrew A. Hunt

Firestop systems play a critical role in maintaining the integrity of a building's passive fire protection strategy, yet they are often underappreciated or misapplied in design specifications. For architects, understanding the importance of specifying firestop correctly is essential to ensuring life safety, code compliance, and the overall resilience of the building. Missteps in firestop specification can compromise compartmentation strategies, increase liability risks, and result in costly remediation during construction or later in the building's life cycle.

One of the most common mistakes is the use of generic or boilerplate specifications that fail to address project-specific conditions or assemblies. This can lead to the selection of incorrect systems or misapplication in the field. Additionally, while widely used spec-writing tools offer efficiency, they often lack the detail and specificity required for complex firestop assemblies, leaving gaps that can undermine a project's fire safety objectives.

Today, architects have access to a range of resources and tools designed to make the firestop specification process more accurate, efficient, and defensible. Leveraging manufacturer support services, UL system databases, and third-party resources can streamline the process while reducing errors and liability. This article will explore the process of firestop system specification with an emphasis on how a well-crafted specification ensures that the design intent is carried through to installation and inspection.

UNDERSTANDING FIRESTOP SYSTEMS

While often confused or used interchangeably in conversation, firestop systems and fireproofing serve distinct purposes within a building's overall fire protection strategy. Fireproofing refers primarily to the application of insulating materials—such as spray-applied fire-resistive materials (SFRM) or

CONTINUING EDUCATION

AIA Continuing Education Provider 1 AIA LU/HSW

1 IIBEC CEH

0.1 ICC CEU

Learning Objectives

By the end of this course, participants will be able to:

1. Recognize the importance of specifying firestop correctly.
2. Identify and avoid the most common mistakes when specifying firestop.
3. Describe the features and shortcomings of the most widely used spec writing tools concerning firestopping.
4. Identify resources and solutions available to help make firestop specification faster, easier, and with lower liability.

Course Level: Introductory

To receive AIA credit, you are required to read the entire article and pass the quiz. Visit **ce.architecturalrecord.com** for the complete text and to take the quiz for free.

AIA COURSE #K2508F

intumescent coatings—directly onto structural elements like steel beams, columns, or decks. The goal of fireproofing is to protect these critical load-bearing components from extreme heat exposure during a fire, allowing them to maintain structural integrity and preventing premature collapse. Fireproofing is a passive fire protection measure focused on preserving the stability of the building itself, buying valuable time for occupants to evacuate and for emergency personnel to intervene.

Firestop systems, on the other hand, are designed to maintain the fire-resistance rating of walls, floors, and ceilings by sealing penetrations, joints, and gaps created by building services such as electrical conduits, pipes, ducts, or cable trays. Unlike fireproofing, which protects structural members, firestopping is focused on compartmentation—containing fire, smoke, and toxic gases to their point of origin by ensuring the continuity of rated assemblies. Firestop systems are critical to preserving the compartmentation strategy of the building, enabling safe evacuation routes, protecting property, and slowing the spread of fire, smoke, and toxins released when materials burn. Both systems are essential, but they address different threats and perform different roles in the overall defense against fire.

A comprehensive understanding of firestopping begins with recognizing its role within the broader category of life safety building systems required by code. Systems such as sprinklers, fire alarms, dampers, and spray-applied fireproofing are all mandated by building codes to enhance occupant safety and protect the structure during a fire event. These systems work collectively to mitigate fire risks; however, each is installed by separate trades at different phases of construction. This fragmented installation approach introduces vulnerabilities, particularly when it comes to firestopping, which, despite its critical role, is often overlooked or misunderstood in the construction process.

Currently, the construction industry lacks a designated, universally recognized trade responsible for firestop installation. Unlike plumbing, electrical, or mechanical systems, there is no legal mandate or union requirement assigning firestop duties to a specific discipline. This has created a problematic culture where firestopping is frequently treated as an afterthought, relegated to the least experienced crew members, often with little training or oversight. The result is widespread misapplication, the use of incorrect products, and inconsistent installation practices that undermine the intended performance of firestop systems.

Photo courtesy of Specified Technologies Inc.

Any time a penetration is made through a fire-resistance-rated assembly, that assembly's integrity is compromised. To restore its performance, appropriate firestop systems must be specified and correctly installed. This includes sealing all penetrations, joints, and gaps to maintain the continuity of the fire barrier.

Any time a penetration is made through a fire-resistance-rated assembly—whether for an outlet box, ductwork, cable tray, piping, or conduit—that assembly's integrity is compromised. To restore its performance, appropriate firestop systems must be specified and correctly installed. This includes sealing all penetrations, joints, and gaps to maintain the continuity of the fire barrier. In the case of construction joints, such as head-of-wall, floor-to-wall, or wall-to-wall conditions, firestopping ensures that the junctions between assemblies function as a unified, continuous protective envelope.

Despite best intentions to install or restore an effective firestop system, common errors include using hard-setting sealants around low-voltage cable penetrations, where future access or modifications are almost certain, leading to unnecessary complications or code violations. In other cases, products that are sensitive to moisture may be used in high-humidity environments, compromising their effectiveness and longevity. These errors are not always the result of intentional negligence but are often due to a lack of understanding or awareness of firestopping requirements among trades.

Firestopping is a complicated yet critical aspect of construction that calls for careful planning to include room for technological advances. "As buildings become more complex, it's critical that firestop systems evolve to be smarter, easier to install, and fully integrated with digital tools," says John Zalepka, Director of Training & Industry Engagements at Specified Technologies Inc. "At STI, we're not just developing products—we're empowering the industry through training and technology to ensure firestopping is done right the first time."

Ultimately, the primary purpose of firestopping is to protect life safety. By restoring the rated performance of assemblies, firestop systems help contain fire, smoke, and toxic gases within designated compartments, providing building occupants with critical additional time to evacuate safely. Despite its technical nature, firestopping is, at its core, about ensuring that people have the best possible chance of surviving a fire event.

▶ Continues at ce.architecturalrecord.com

***Andrew A. Hunt** is Vice President of Confluence Communications and specializes in writing, design, and pro-duction of articles and presentations related to sustainable design in the built environment. In addition to in-structional design, writing, and project management, Andrew is an accomplished musician and voice over ac-tor, providing score and narration for both the entertainment and education arena. www.confluencec.com https://www.linkedin.com/in/andrew-a-hunt-91b747/*

Specified Technologies Inc. (STI) is a leader in developing innovative fire protection systems that help safeguard buildings by stopping the spread of fire, smoke, and hot gases. For over 35 years, STI has collaborated closely with architects and the broader construction community to transform complex firestopping challenges into solutions that seamlessly integrate into building design.

Certified glazing assemblies provide reliable performance under attack. ASTM F3561 sets the baseline for school security glazing after simulated active shooter events—critical for architects and designers to specify.

Photo by Lockheed Architectural Solutions; courtesy of National Glass Association

Security Glass and Glazing Systems

Effective deterrent solutions during active shooter events

Sponsored by **National Glass Association**

By Andrew A. Hunt

Trigger Warning: *This article discusses school security in the context of active shooter events and forced-entry scenarios. It includes references to violence and security measures that may be distressing. Reader discretion is advised.*

Active shooter events have increased in frequency in the past two decades, placing renewed focus on strategies that delay entry and provide critical response time. In school buildings, one of the most vulnerable access points is doors and windows. Security glazing systems designed to resist forced entry play a pivotal role in slowing down an intruder, enabling administrators to activate emergency protocols and giving law enforcement time to respond. Unlike standard glass, tested and certified glazing assemblies offer more reliable and predictable performance under duress. ASTM F3561 provides the industry's baseline for evaluating fenestration systems subjected to forced-entry attacks following a simulated active shooter event. This standard is now recognized as the minimum requirement for school security glazing, and it is critical that architects and designers understand the importance of specifying window and door assemblies that meet the standard. This article will examine the evolution of active shooter incidents in U.S. schools and offer guidance on selecting appropriate glazing systems that align with both performance standards and architectural intent, ensuring a layered, reliable defense against intrusions.

THE RISING TIDE OF ACTIVE SHOOTER EVENTS IN PUBLIC EDUCATION

Over the past two decades, school shootings in the United States have transitioned from rare tragedies to a far more alarming and frequent national crisis. Between the 2000–01 and 2021–22 school years, there were 1,375 recorded shootings at public and private K–12 schools, resulting in 515 deaths and 1,161 injuries, meaning roughly 70 percent of these incidents caused casualties.

CONTINUING EDUCATION

1 AIA LU/HSW

1 GBCI CE HOUR

1 IDCEC CEU/HSW

1 IIBEC CEH

0.1 ICC CEU

Learning Objectives

After completing this course, you should be able to:

1. Discuss the history and frequency of active shooter events, specifically in school buildings.
2. List common myths associated with the specification of modern glass and glazing and the limitations of previous security glazing standards.
3. Explain how appropriately specified security glazing systems serve as a valuable and effective deterrent during active shooter events.
4. Identify key components of ASTM F3561 *Standard Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack* that address design and performance requirements for security glass window and door assemblies.

To receive AIA credit, you are required to read the entire article and pass the quiz. Visit **ce.architecturalrecord.com** for the complete text and to take the quiz for free.

AIA COURSE #K2507U

The 2021–22 academic year marked an all-time high, with 327 shootings, 81 fatalities, and 269 injuries, far exceeding previous records.

By 2022, public discourse on this issue was dominated by the year's grim statistics: 51 shootings that caused injury or death, resulting in 18 school-associated fatalities and at least 77 injuries. This sharply contrasts with 2021, which saw 35 incidents, and 2020—the beginning of the pandemic—when school shootings dropped to just 10.

The trend has not reversed. Education Week tracking shows 38 such shootings in 2023, with 21 people killed and 42 injured, making it the second-highest incident year since 2018. Through all of 2024, there were 39 incidents resulting in 18 deaths and 59 injuries. While the number of people shot remained lower than in 2022, incidents remained historically high.

According to the National Center for Education Statistics, active-shooter events at elementary and secondary schools claimed 328 casualties—131 fatalities and 197 injuries—from 2000 through 2022. Notably, there were 52 casualties in 2022 alone, making it the second-highest year in recorded data.

Teachers, students, and communities feel the reverberations of this violence far beyond the classroom. Violent incidents in public schools—including shootings, fights, or threats—are reported at a rate of roughly 19 per 1,000 students annually, with about 5 per 1,000 incidents reaching law enforcement. What this suggests is that while we can collect information about events that rise to the level of alerting authorities to the risk, the actual risk to students, staff, and visitors of public schools is significantly higher.

The past four years—2021 through 2024—represent the peak period in recorded history, with a surge in incidents coinciding with increased student exposure and casualties. There are many causes—rising firearm prevalence, social stressors, and the contagion or copycat effect acknowledged in academic studies—yet the facts are clear: violence is escalating in public educational environments. The year 2025 is statistically on track to continue this trend of violence, with at least 7 shootings with injuries or deaths, involving 2 fatalities and 12 injuries.

These statistics show no signs of a downward trend.

Photo by Lockheed Architectural Solutions, courtesy of National Glass Association

Research shows attackers often exploit perceived weak points like glass to enter schools—bypassing locks by simply shooting through standard glazing.

Active-Shooter Incidents

Once the act of violence is instigated, how it will transpire or escalate is unknown. That is to say, gun violence on public school grounds may start for a number of reasons, including personal rivalries, drug and crime violence, or mental health issues. After the conflict has begun, it can be difficult to predict the path or outcome of these random and likely not well-planned events. However, there is a distinction to be made between solitary acts of violence and premeditated mass shootings.

For the purposes of this article, we will focus on preventative measures to thwart, frustrate, or minimize the lethal impact of active-shooter incidents. Active shooter incidents refer to events in which someone is actively discharging a weapon with the intent to harm.

From 2000 through 2022, the National Center for Education Statistics reported a total of 50 active-shooter incidents at elementary and secondary schools across the U.S. Since the first highly publicized case at Columbine High School in April 1999, the incidents represent the known events where an individual actively engaged in firearm violence on school grounds. These NCES figures include both public and private K–12 institutions.

▶ Continues at ce.architecturalrecord.com

Andrew A. Hunt *is Vice President of Confluence Communications and specializes in writing, design, and production of articles and presentations related to sustainable design in the built environment. In addition to instructional design, writing, and project management, Andrew is an accomplished musician and voice-over actor, providing score and narration for both the entertainment and education arenas. www.confluencec.com https://www.linkedin.com/in/andrew-a-hunt-91b747/*

NGA
NATIONAL GLASS ASSOCIATION with GANA

The National Glass Association (NGA) is the largest trade association serving the architectural glass and metals industry. A technical and educational resource, NGA envisions a future in which glass is the material of choice to enhance spaces where people live, play, learn, and work.

Morning light reveals a high-performance, modern farmhouse with an on-site propane tank, providing efficient, reliable energy for heating, cooking, and backup power in architect-designed residential systems.

Photo courtesy of Propane Education & Research Council

Propane Essentials

Building high-performance homes with versatile energy systems

Sponsored by **Propane Education & Research Council**

By Kathy Price-Robinson

Today's residential projects demand energy strategies that balance efficiency, sustainability, cost, and resilience. Propane offers architects a flexible, low-carbon fuel that complements electricity, natural gas, heating oil, and solar energy, especially for rural, off-grid, or resilience-focused homes.

What Is Propane?

Propane (C_3H_8) is a hydrocarbon gas widely used in residential construction for space and water heating, cooking, fireplaces, and backup power. Propane is primarily a byproduct of natural gas processing and crude oil refining. During these industrial processes, propane is separated and captured before it would otherwise be wasted, either burned off as flared gas or released into the atmosphere. If not captured, this valuable, energy-dense gas would be lost. By using propane, architects and builders reclaim a source of energy that would otherwise be wasted, using it to power homes, businesses, and job sites.

Why Propane Matters in Residential Architecture

For architects, propane offers flexibility, reliability, and high performance, especially in locations beyond the reach of natural gas pipelines. Stored on site, propane delivers consistent thermal energy for space heating, water heating, cooking, fireplaces, and backup power. Unlike grid-tied electric systems, propane avoids upstream transmission losses and ensures energy availability during outages. With multiple venting and installation options, propane systems integrate easily into diverse building types, supporting resilient design and high-efficiency performance metrics. Its clean combustion also contributes to healthier indoor air and reduced local emissions.

A Domestic and Scalable Energy Source

More than 90 percent of propane used in the U.S. is produced domestically, making it a secure and reliable energy choice. According to the U.S. Energy Information Administration

CONTINUING EDUCATION

1 AIA LU/HSW
1 IIBEC CEH
1 IDCEC CEU/HSW
0.1 ICC CEU

Learning Objectives

After completing this course, you should be able to:

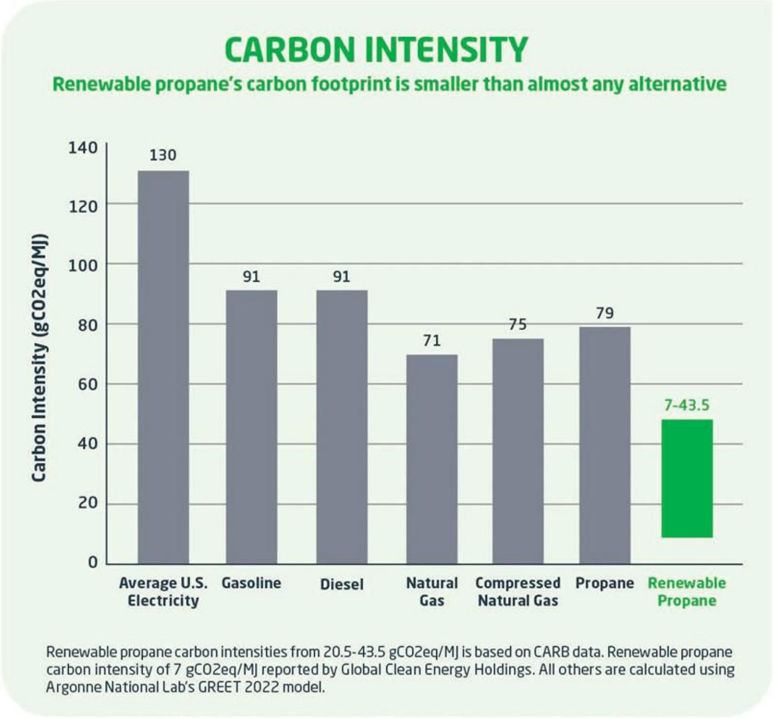
1. Identify propane's role as a flexible energy option alongside electricity, natural gas, and solar, including renewable propane.
2. Describe how propane supports health, low emissions, and energy resilience, especially off-grid.
3. Recognize key residential uses of propane, from indoor systems to outdoor living and construction heat.
4. Discuss specification essentials, including tank sizing, placement, and storage types.
5. Explain propane's contribution to Zero Net Energy (ZNE) goals and its alignment with energy codes and performance standards.

To receive AIA credit, you are required to read the entire article and pass the quiz. Visit **ce.architecturalrecord.com** for the complete text and to take the quiz for free.

AIA COURSE #K2508J

Photo courtesy of Propane Education & Research Council

Camelina, a resilient oilseed crop, is a key feedstock in producing renewable propane for low-carbon residential energy systems.



Renewable propane carbon intensities from 20.5-43.5 gCO2eq/MJ is based on CARB data. Renewable propane carbon intensity of 7 gCO2eq/MJ reported by Global Clean Energy Holdings. All others are calculated using Argonne National Lab's GREET 2022 model.

Image courtesy of Propane Education & Research Council

Renewable propane from camelina offers ultra-low carbon intensity, far below electricity, gasoline, diesel, and natural gas.

(EIA), the U.S. annually produces nearly 40 billion gallons of propane. Annually, the U.S. uses 10 billion gallons domestically, including residential, commercial, agricultural, transportation, and more, creating the opportunity for a robust export market.

Renewable Propane: Advancing Low-Carbon Building

Renewable propane is chemically identical to conventional propane but is produced from sustainable feedstocks—organic raw materials such as used cooking oil, animal fats, and camelina, a drought-tolerant, non-food oilseed crop. A feedstock is any material used as an input to a production process, and in this context, it refers to waste or renewable biological sources. By capturing and refining these byproducts, renewable propane diverts waste from landfills and reduces the need for extraction. The result is a valuable, low-carbon fuel that supports cleaner energy systems and advances circular economy goals.

Megajoules (MJ) are a standard energy unit used to evaluate fuels and their environmental impact. One MJ equals one million joules, about the energy needed to boil a quart of water. Carbon intensity (CI), expressed in grams of carbon dioxide equivalent per megajoule (gCO_2e/MJ), measures total greenhouse gas emissions throughout a fuel's life cycle, including production, refining, transport, and use.

Renewable propane stands out as a low-carbon energy solution, with lifecycle analyses from the California Air Resources Board showing carbon intensity (CI) scores as low as 7 gCO_2e/MJ for camelina-based fuels and around 20 gCO_2e/MJ for waste oil sources, compared to approximately 79 gCO_2e/MJ for conventional propane. Independent data from the Propane Education & Research Council and EnergyStandards.org further validates that renewable propane can reduce emissions by up to 90 percent.

▶ Continues at ce.architecturalrecord.com

__Kathy Price-Robinson__ is a nationally known remodeling and construction writer. Her award-winning remodeling series titled Pardon Our Dust ran for 12 years in the Los Angeles Times. www.kathyprice.com.

ENERGY FOR EVERYONE propane

The Propane Education & Research Council is a nonprofit that provides leading propane safety and training programs and invests in research and development of new propane-powered technologies. PERC programs benefit a variety of markets, including residential and commercial building.

CORTONA
at FOREST PARK

Improved acoustics, sustainability, and ease of installation converge with innovations in PACT design.

Photo courtesy of TAMLYN

Fundamentals of Perimeter Acoustical Ceiling Trim

Improved acoustics, sustainability, and ease of installation converge with innovations in PACT design

Sponsored by **TAMLYN**

By Andrew A. Hunt

Perimeter Acoustical Ceiling Trim (PACT) is a practical and efficient building product that can provide benefits to architects, builders, installers, and occupants in one simple solution. Designing and installing wall and ceiling assemblies in multifamily settings that address acoustic challenges requires evaluating each component of the assembly to ensure that all the parts are working in unison to provide a superior final product. Traditional trims often fail to manage noise and meet environmental standards. PACT solves these issues with innovative materials and design, improving sound absorption and reducing noise transfer for a quieter environment.

Continues at ce.architecturalrecord.com

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1 AIA LU/HSW

1 IDCEC CEU/HSW

1 GBCI CE HOUR

0.1 ICC CEU

Learning Objectives

After viewing this presentation, you should be able to:

1. Explain the role of Perimeter Acoustical Ceiling Trim (PACT) in improving acoustic performance and noise control in commercial and residential spaces
2. Describe how PACT contributes to health, safety, and occupant wellness by enhancing sound absorption and reducing noise pollution, which can improve mental focus and reduce stress
3. Identify the sustainability benefits of PACT, including the use of recycled materials and low-emission coatings that support LEED and WELL certification goals
4. Evaluate the ease of installation and long-term maintenance benefits of PACT, including how its modular design reduces labor time and cost

To receive AIA credit, you are required to view the entire presentation and pass the quiz. Visit **ce.architecturalrecord.com** to view the multimedia CEU and to take the quiz for free.

AIA COURSE #K2507Q

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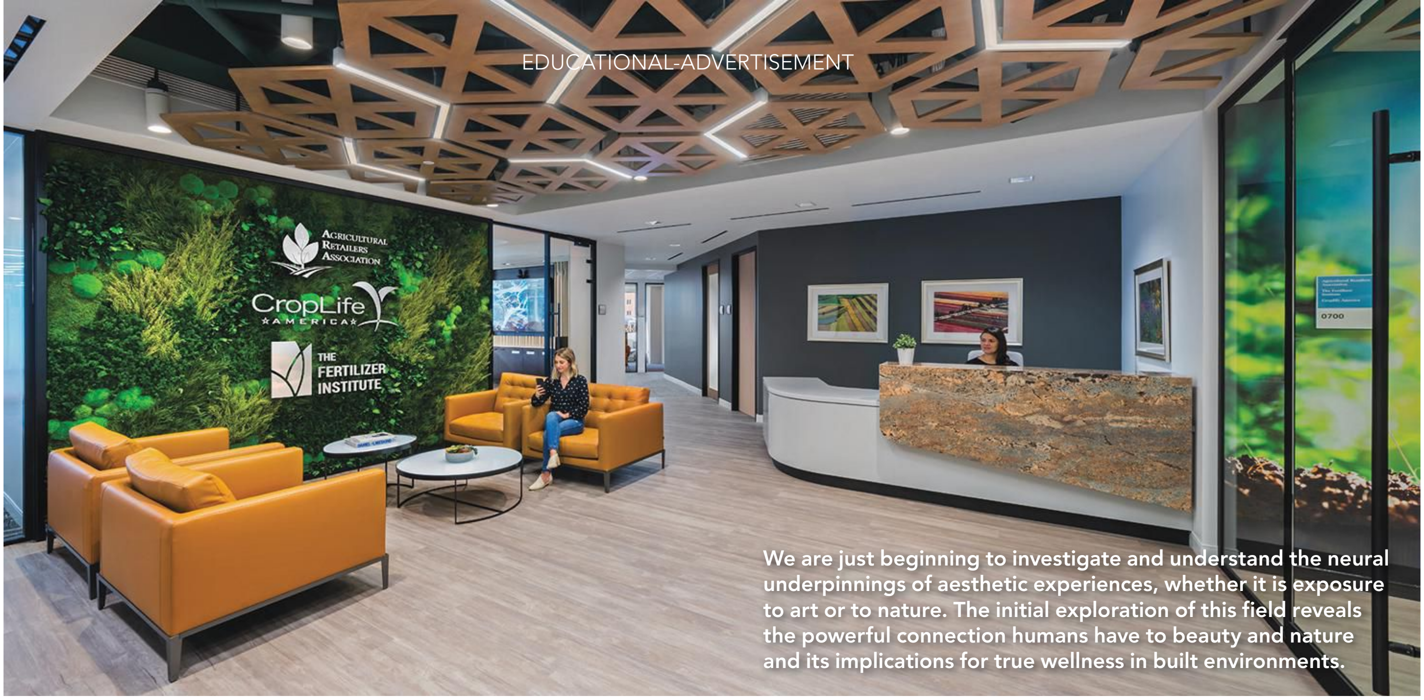

We are just beginning to investigate and understand the neural underpinnings of aesthetic experiences, whether it is exposure to art or to nature. The initial exploration of this field reveals the powerful connection humans have to beauty and nature and its implications for true wellness in built environments.

Photo courtesy of ©IRIS22 Productions, LLC

Restorative & Regenerative Design as Holistic Design Approach

Neuroaesthetics, neuroarchitecture, biomimicry, and preserved gardens collaborate to achieve transformative, human-centric spaces

Sponsored by **Garden On The Wall**

By Amanda Voss, MPP

This course introduces interior designers and architects to the innovative fields of Neuroaesthetics, Neuroarchitecture, and Biomimicry, with a special focus on integrating Preserved Gardens and Biophilic Design principles. Participants will learn to create environments that enhance human well-being and environmental sustainability, exploring the psychological and regenerative impact of design elements.

The curriculum is structured to progress from fundamental concepts to more intricate applications, making it ideal for professionals aiming to incorporate cutting-edge science into their design practices. Participants will gain a deep understanding of Biomimetics, Biomimicry, Neuroaesthetics, Neuroarchitecture, Restorative Design, and Regenerative Design.

Through this comprehensive approach, designers will learn to craft spaces that are not only aesthetically pleasing but also support cognitive and emotional health. The course also provides design professionals with insights into mindful design and a holistic approach, considering both neurotypical and neurodivergent occupants of designed spaces.

By the end of the course, participants will be equipped with the knowledge and tools to create innovative, sustainable, and human-centered designs that reflect the latest advancements in the intersection of neuroscience and architecture.

▶ Continues at ce.architecturalrecord.com

Amanda Voss, MPP is an author, editor, and policy analyst. Writing for multiple publications, she has also served as the managing editor for Energy Design Update.

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AIA Continuing Education Provider 1 AIA LU/HSW
GBCI 1 GBCI CE HOUR
IDCEC APPROVED 1 IDCEC CEU/HSW
PREFERRED EDUCATION PROVIDER 0.1 ICC CEU

Learning Objectives

After completing this course, you should be able to:

1. Explain the basic principles of neuroaesthetics and neuroarchitecture and how these disciplines intersect with interior design and architecture, using insights from key studies and research.
2. Apply the concepts of biophilic design and sensory experience to enhance indoor environments and boost mental health and productivity via biomimicry.
3. Design spaces that integrate preserved natural elements, such as moss walls and preserved gardens, and form a dynamic fusion between aesthetic values and psychological well-being.
4. Critically evaluate and adapt existing architectural and interior designs to better comply with neuroaesthetics principles, improving both the functionality and the human experience within designed spaces.

To receive AIA credit, you are required to read the entire article and pass the quiz. Visit **ce.architecturalrecord.com** for the complete text and to take the quiz for free.

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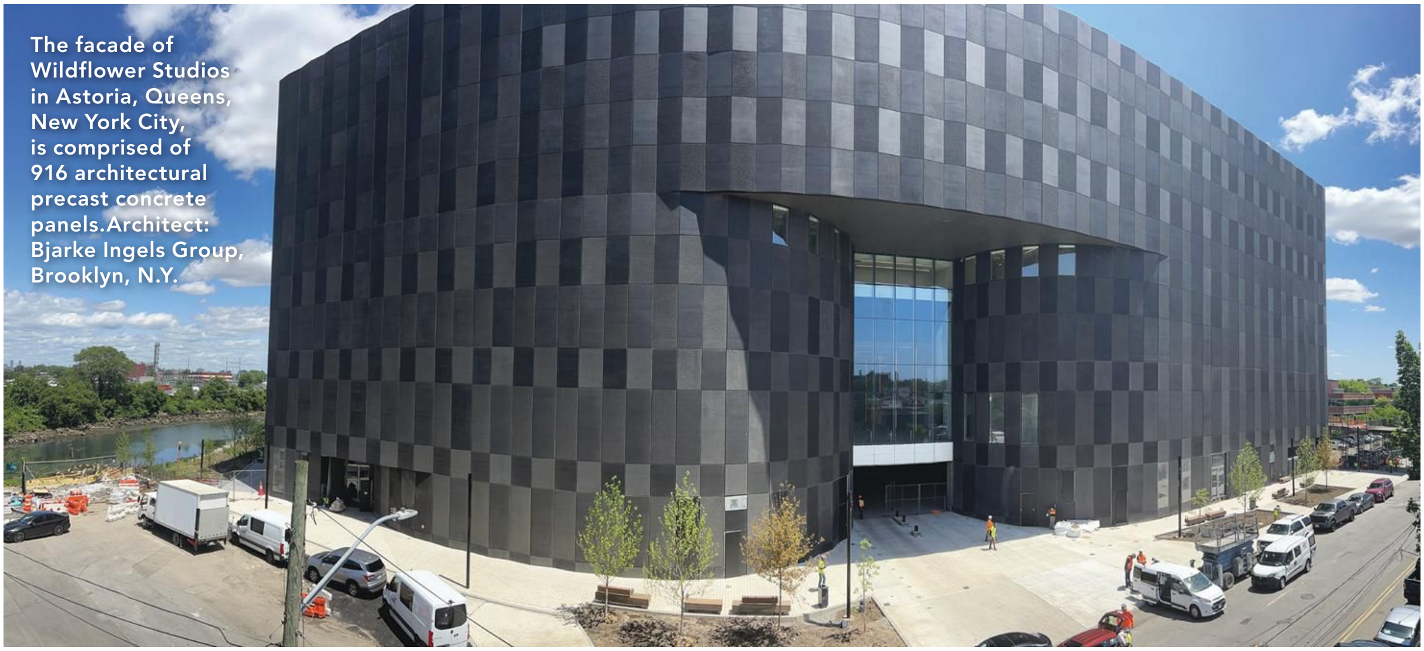

The facade of Wildflower Studios in Astoria, Queens, New York City, is comprised of 916 architectural precast concrete panels.Architect: Bjarke Ingels Group, Brooklyn, N.Y.

Photo courtesy of PCI

Precast Concrete Elements and Systems for Building Enclosure

Built to last, designed for now

Sponsored by **Precast/Prestressed Concrete Institute**

By Russell A Davidson, FAIA

As architects, we are taught to select materials so that the nature of the material aligns with its intended use. Frank Lloyd Wright was a master of this approach, which is why the title of Henry Russell Hitchcock's treatise on Wright is titled In the Nature of Materials. Fay Jones' Woodland Chapel evokes the branches and trunks of trees with wood timbers to create an inspirational setting in a forest. Louis Kahn also challenged students to imagine, "What does a brick want to be?" So, what do precast concrete building enclosure elements want to be? They want to be whatever the architect wants them to be.

Precast concrete can be formed into any shape or building enclosure element with applications that are liberating and limitless. More than any other material, architects and contractors have the freedom to determine the shape and composition of precast concrete building enclosures. They can be one piece of the building envelope puzzle, along with glass, brick, or stone, or they can be the entire puzzle with integrated insulation, interior finish, and windows already installed. The possibilities are endless and are shaped by the imagination of the architect.

▶ Continues at ce.architecturalrecord.com

CONTINUING EDUCATION

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GBCI 1 GBCI CE HOUR

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Learning Objectives

After completing this course, you should be able to:

1. Identify and recognize the characteristics of building enclosure elements and systems that utilize precast concrete.
2. Investigate the design potential and innovative opportunities to utilize precast concrete elements and systems to create sustainable, resilient, and economical building envelopes.
3. Discuss life cycle stages and how they impact the formulation of Environmental Product Declarations (EPD) related to architectural precast concrete building enclosure elements.
4. Assess the functional contributions of elements and systems as they contribute to green and sustainable design.
5. Specify precast concrete elements and systems in a variety of green and conventional buildings and formulate appropriate selections related to specific applications.

To receive AIA credit, you are required to read the entire article and pass the quiz. Visit **ce.architecturalrecord.com** for the complete text and to take the quiz for free.

AIA COURSE #K2508G

PCI
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The Precast/Prestressed Concrete Institute (PCI) is a technical institute for the precast concrete structures and systems industry. PCI develops, maintains, and disseminates the Body of Knowledge for the design, fabrication, and construction of precast concrete structures and systems. PCI develops consensus-based standards, industry handbooks, quality assurance programs, certification, research and development projects, design manuals, continuing education, and periodical publications. PCI members include precast concrete producers, erectors, suppliers, professional engineers and architects, educators, students, and industry consultants who complement the wide range of knowledge of precast concrete.

Ongoing Exhibitions

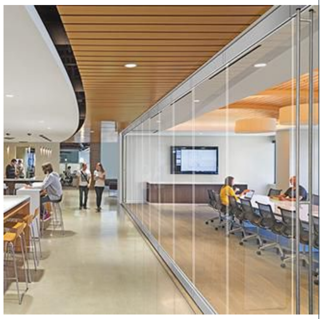
Two Words: No Plastics—Making Buildings Plastic-Free
Washington, D.C.
Through September 25, 2025
Presented by the District Architecture Center, this exhibition explores the ways in which companies worldwide are making impressive strides in the movement away from plastic use in architecture and how we, as everyday consumers, can aid in the cause. See dcarchcenter.org.

Shakers: A World in the Making
Weil am Rhein, Germany
Through September 28, 2025
Debuting at the Vitra Design Museum, the Formafantasma-designed *Shakers: World in the Making* examines how the beliefs of a religious group formed in the 18th century yielded meticulously crafted furniture and vernacular architecture that continue to resonate centuries later. Bringing together a wide range of Shaker furniture, architectural elements, tools, and commercial goods paired with newly commissioned works by contemporary artists and designers, the exhibition reveals the complex social, material, and spiritual context that created the "Shaker style" and what possibilities its values offer today. The traveling show will appear next year at partnering museums ICA Philadelphia, the Milwaukee Museum of Art, and the Shaker Museum in Chatham, New York. See design-museum.de.

The Prize is the Beginning
Chicago
Through October 26, 2025
Presented in partnership by the Mies Crown Hall Americas Prize (MCHAP) and the Chicago Architecture Center (CAC), this exhibition brings to life the compelling work recognized by MCHAP's Americas Prize and Emerge Prize and invites the public to reflect on the transformative power of architecture across the Americas. Housed in CAC's Usher Lambe Gallery, *The Prize Is the Beginning* highlights a selection of built works that demonstrate a deep commitment to craft, community, and context. Rather than positioning the prize as an end, the exhibition frames recognition as a point of departure and as a catalyst for dialogue, reflection, and continuing impact. See architecture.org.

Upcoming Exhibitions

Hill Station: Architecture and the Altitudes of Empire Installation
Liverpool, England
September 4–November 16, 2025
An exhibition in the Tate Liverpool's temporary home at RIBA North examines the architectural history of segregation intended to prevent malaria transmission in colonial-era Freetown, Sierra Leone, and its entanglements with the expansion of the British Empire and the emergence of tropical medicine. Combining architectural-model work



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DATES & Events

and film, this new installation—part of a wider research project, Salone Drift—explores architecture, colonialism, and segregation's relation to ideas of health, as well as the complex links between the two port cities of Liverpool and Freetown. See tate.org.uk.

Events

Yes And: The 2025 Exhibit Columbus Exhibition
Columbus, Indiana
August 15–November 30, 2025
The exhibition of the fifth edition of *Exhibit Columbus* kicks off over its opening weekend with parties, presentations, and the activation of 13 outdoor installations spread throughout the small but architecturally famous Indiana city's downtown. Sites include the historic Crump Theatre, I.M. Pei's Cleo Rogers Memorial Library Plaza, and the courtyard of the First Christian Church, designed by Eliel Saarinen. Each of these works is inspired by partnerships across the diverse communities of Columbus and connected to the improv-riffing theme of the 2024–25 cycle, *Yes And*. Among those participating are the latest J. Irwin and Xenia S. Miller Prize awardees—Adaptive Operations, AD–WO, Studio Barnes, and Studio Cooke John—joined by the six recipients of the University Design Research Fellowship, a pair of Design Education Teams, and Communication Design winner Sing-Sing. See exhibitcolumbus.org.

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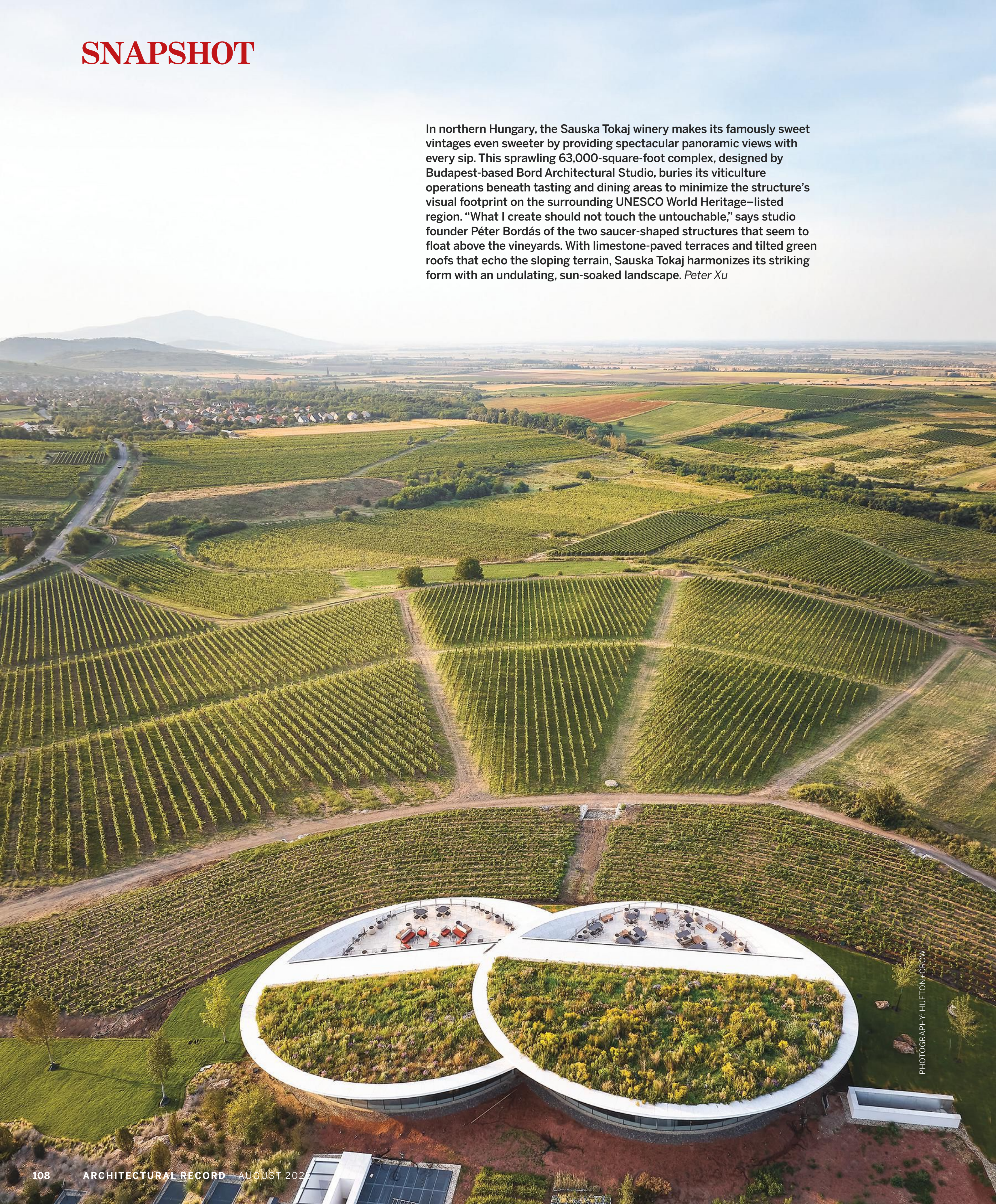
Ⓡ Regional Insert

SNAPSHOT



In northern Hungary, the Sauska Tokaj winery makes its famously sweet vintages even sweeter by providing spectacular panoramic views with every sip. This sprawling 63,000-square-foot complex, designed by Budapest-based Bord Architectural Studio, buries its viticulture operations beneath tasting and dining areas to minimize the structure's visual footprint on the surrounding UNESCO World Heritage–listed region. "What I create should not touch the untouchable," says studio founder Péter Bordás of the two saucer-shaped structures that seem to float above the vineyards. With limestone-paved terraces and tilted green roofs that echo the sloping terrain, Sauska Tokaj harmonizes its striking form with an undulating, sun-soaked landscape. *Peter Xu*

PHOTOGRAPHY: HUFTON+CROW

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